

State	Store	Info 1	Info 2	Info 3	City	Total Margin & Station
CA	Pilot	Travel	Center	#372	Castaic	\$ 1.3106
CA	Pilot	Travel	Center	#381	Hesperia	\$ 1.0294
CA	Flying	J		#613	Bakersfield	\$ 0.9694
CA	Flying	J		#614	Barstow	\$ 0.9894
CA	Flying	J		#616	Frazier Park	\$ 0.9959
CA	Flying	J		#617	Lodi	\$ 1.0094
CA	Flying	J		#618	Ripon	\$ 1.1094
CA	Flying	J		#765	Thousand Palms	\$ 1.0559
CA	Pilot	Dealer		#879	Sacramento	\$ 1.0969
CA	Pilot	Travel	Center	#1019	Orland	\$ 0.9578
CA	Flying	J		#1080	Patterson	\$ 0.7159
CO	Pilot	Travel	Center	#316	Denver	\$ 0.7035
CO	Pilot	Travel	Center	#592	Grand Junction	\$ 0.7535
CO	Flying	J		#619	Aurora	\$ 0.6635
CO	Flying	J		#621	Limon	\$ 0.7235
CO	Pilot	Thomas	Cardlock	#781	Steamboat Springs	\$ 0.7635
CT	Pilot	Travel	Center	#255	Milford	\$ 0.7885
CT	Pilot	Dealer		#882	North Stonington	\$ 0.7885
FL	Pilot	Travel	Center	#4556	Wildwood	\$ 0.7605
FL	Pilot	Travel	Center	#87	Baldwin	\$ 0.6605
FL	Pilot	Travel	Center	#88	Cocoa	\$ 0.7960
FL	Pilot	Travel	Center	#89	Ellenton	\$ 0.6850
FL	Pilot	Travel	Center	#90	Fort Pierce	\$ 0.7660
FL	Pilot	Travel	Center	#91	Jacksonville	\$ 0.7250
FL	Pilot	Travel	Center	#92	Ocala	\$ 0.7650
FL	Pilot	Travel	Center	#94	Punta Gorda	\$ 0.7205
FL	Pilot	Travel	Center	#95	Wildwood	\$ 0.7605
FL	Pilot	Travel	Center	#96	Okeechobee	\$ 0.7960
FL	Pilot	Travel	Center	#293	Ocala	\$ 0.8005
FL	Pilot	Travel	Center	#352	Fort Myers	\$ 0.7605
FL	Pilot	Travel	Center	#374	Marianna	\$ 0.6405
FL	Pilot	Travel	Center	#424	Ocala	\$ 0.8005
FL	Pilot	Travel	Center	#425	Midway	\$ 0.6405
FL	Pilot	Travel	Center	#471	Haines City	\$ 0.7005
FL	Pilot	Travel	Center	#500	Jasper	\$ 0.6250
FL	Flying	J		#622	Fort Pierce	\$ 0.7660
FL	Flying	J		#623	Quincy	\$ 0.6405
FL	Flying	J		#624	Dade City	\$ 0.7405
FL	Flying	J		#625	Tampa	\$ 0.6805
FL	Flying	J		#626	St. Augustine	\$ 0.7250
FL	Pilot	Dealer		#873	Medley	\$ 0.7850
FL	Pilot	Dealer		#874	Miami	\$ 0.7850
FL	Pilot	Dealer		#897	Miami Gardens	\$ 0.7850
FL	Pilot	Travel	Center	#1046	South Bay	\$ 0.7005

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
FL	Pilot	Travel	Center	#1047	Jacksonville	\$ 0.5850
FL	Pilot	Dealer		#1058	Waldo	\$ 0.6605
GA	Pilot	Travel	Center	#65	Augusta	\$ 0.4841
GA	Pilot	Travel	Center	#66	Braselton	\$ 0.4241
GA	Pilot	Travel	Center	#67	Cartersville	\$ 0.4641
GA	Pilot	Travel	Center	#68	Dublin	\$ 0.5641
GA	Pilot	Travel	Center	#69	LaGrange	\$ 0.5141
GA	Pilot	Travel	Center	#71	Port Wentworth	\$ 0.4641
GA	Pilot	Travel	Center	#72	Savannah	\$ 0.6241
GA	Pilot	Travel	Center	#73	Valdosta	\$ 0.5686
GA	Pilot	Travel	Center	#4557	Carnesville	\$ 0.4996
GA	Pilot	Travel	Center	#4558	Calhoun	\$ 0.4041
GA	Pilot	Travel	Center	#4559	Villa Rica	\$ 0.4686
GA	Pilot	Travel	Center	#4560	Jackson	\$ 0.6041
GA	Pilot	Travel	Center	#4561	Valdosta	\$ 0.5686
GA	Pilot	Travel	Center	#4562	Kingsland	\$ 0.5286
GA	Pilot	Travel	Center	#144	Augusta	\$ 0.4741
GA	Pilot	Travel	Center	#192	Tifton	\$ 0.5441
GA	Pilot	Travel	Center	#254	Wildwood	\$ 0.5041
GA	Pilot	Travel	Center	#260	Albany	\$ 0.5086
GA	Pilot	Travel	Center	#267	Byron	\$ 0.4841
GA	Pilot	Travel	Center	#312	Tallapoosa	\$ 0.4686
GA	Pilot	Travel	Center	#319	Dalton	\$ 0.4041
GA	Pilot	Travel	Center	#331	Atlanta	\$ 0.4686
GA	Pilot	Travel	Center	#398	Vienna	\$ 0.5841
GA	Pilot	Travel	Center	#415	Rising Fawn	\$ 0.4641
GA	Pilot	Travel	Center	#416	Cordele	\$ 0.5841
GA	Pilot	Travel	Center	#417	Temple	\$ 0.4686
GA	Pilot	Travel	Center	#420	Madison	\$ 0.6041
GA	Pilot	Travel	Center	#421	Dalton	\$ 0.4041
GA	Pilot	Travel	Center	#422	Newnan	\$ 0.5886
GA	Pilot	Travel	Center	#575	St. Mary's	\$ 0.5641
GA	Flying	J		#627	Brunswick	\$ 0.6041
GA	Flying	J		#628	Carnesville	\$ 0.4641
GA	Flying	J		#630	Jackson	\$ 0.6041
GA	Flying	J		#631	Lake Park	\$ 0.6041
GA	Flying	J		#632	Resaca	\$ 0.4041
GA	Flying	J		#633	Union Point	\$ 0.6641
GA	Flying	J		#634	Temple	\$ 0.4686
IA	Pilot	Travel	Center	#43	Walcott	\$ 0.5695
IA	Pilot	Travel	Center	#131	Osceola	\$ 0.6295
IA	Pilot	Travel	Center	#238	Percival	\$ 0.4295
IA	Pilot	Travel	Center	#268	Walcott	\$ 0.5695
IA	Pilot	Travel	Center	#329	Council Bluffs	\$ 0.4895

State	Start	Info 1	Info 2	Info 3	City	Total Margin At Station
IA	Pilot	Travel	Center	#373	Des Moines	\$ 0.6695
IA	Pilot	Travel	Center	#407	Clear Lake	\$ 0.4695
IA	Pilot	Travel	Center	#495	Brooklyn	\$ 0.4895
IA	Pilot	Travel	Center	#496	Atalissa	\$ 0.5495
IA	Road	Ranger		#532	Elk Run Heights	\$ 0.4295
IA	Flying	J		#572	Williams	\$ 0.4695
IA	Pilot	Travel	Center	#594	Sioux City	\$ 0.5295
IA	Flying	J		#636	Davenport	\$ 0.5695
IA	Flying	J		#637	Evansdale	\$ 0.4295
IA	Pilot	Dealer		#893	Avoca	\$ 0.4905
IA	Flying	J		#913	Altoona (Des Moines Area)	\$ 0.5095
IA	Pilot	Travel	Center	#1012	Mt. Pleasant	\$ 0.5195
ID	Pilot	Travel	Center	#350	Mountain Home	\$ 0.6685
ID	Flying	J		#638	Caldwell	\$ 0.7285
ID	Flying	J		#639	Post Falls	\$ 0.8685
ID	Flying	J		#640	Jerome	\$ 0.5685
ID	Flying	J		#641	McCammon	\$ 0.7685
ID	Flying	J		#777	East Boise	\$ 0.6285
ID	Flying	J	#1043		Idaho Falls	\$ 0.7085
IL	Pilot	Travel	Center	#39	Monee	\$ 0.7175
IL	Pilot	Travel	Center	#165	Effingham	\$ 0.6175
IL	Pilot	Dealer		#2406	Rockford	\$ 0.6175
IL	Pilot	Dealer		#2408	Lincoln	\$ 0.6175
IL	Pilot	Travel	Center	#171	Oakwood	\$ 0.8175
IL	Pilot	Dealer		#2409	Tuscola	\$ 0.8175
IL	Pilot	Travel	Center	#236	Minooka	\$ 0.6575
IL	Pilot	Travel	Center	#249	Troy	\$ 0.7775
IL	Pilot	Travel	Center	#299	Bloomington	\$ 0.9175
IL	Pilot	Travel	Center	#313	East St. Louis	\$ 0.7775
IL	Road	Ranger		#326	Minonk	\$ 0.7775
IL	Road	Ranger		#347	McLean	\$ 0.7775
IL	Pilot	Travel	Center	#368	Decatur	\$ 0.7575
IL	Road	Ranger		#378	Chicago	\$ 0.8775
IL	Pilot	Travel	Center	#468	Gilman	\$ 0.5575
IL	Pilot	Travel	Center	#473	Channahon	\$ 0.8975
IL	Pilot	Travel	Center	#476	Woodhull	\$ 0.6775
IL	Pilot	Travel	Center	#482	Mount Vernon	\$ 0.5975
IL	Pilot	Travel	Center	#483	Morris	\$ 0.7575
IL	Road	Ranger		#512	Springfield	\$ 0.9175
IL	Thorntons			#514	Lincoln	\$ 0.6585
IL	Road	Ranger		#515	Ottawa	\$ 0.7575
IL	Road	Ranger		#520	New Berlin	\$ 0.7575
IL	Road	Ranger		#523	Dixon	\$ 0.8175
IL	Road	Ranger		#525	Springfield	\$ 0.9175

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
IL	Road	Ranger		#526	Champaign	\$ 0.9175
IL	Road	Ranger		#529	Tuscola	\$ 0.9175
IL	Road	Ranger		#530	Mendota	\$ 0.8175
IL	Road	Ranger		#534	Okawville	\$ 0.7575
IL	Road	Ranger		#535	Rockford	\$ 0.5185
IL	Road	Ranger		#536	South Beloit	\$ 0.8775
IL	Road	Ranger		#537	Winnebago	\$ 0.8775
IL	Road	Ranger		#539	Rochelle	\$ 0.8765
IL	Road	Ranger		#540	Loves Park	\$ 0.8775
IL	Road	Ranger		#541	Princeton	\$ 0.7175
IL	Road	Ranger		#543	Hampshire	\$ 0.4175
IL	Road	Ranger		#579	Marshall	\$ 0.8175
IL	Pilot	Travel	Center	#595	Marion	\$ 0.8175
IL	Flying	J		#642	Alorton	\$ 0.7775
IL	Flying	J		#643	Effingham	\$ 0.6175
IL	Flying	J		#644	LaSalle	\$ 0.6575
IL	Flying	J		#645	Pontoon Beach	\$ 0.7775
IL	Flying	J		#646	South Beloit	\$ 0.8175
IL	Road	Ranger		#886	Grayville	\$ 0.8175
IL	Flying	J	US	#889	Mt. Vernon	\$ 0.8175
IL	Pilot	Travel	Center	#1024	Joliet	\$ 0.8575
IL	Pilot	Travel	Center	#1030	Alsip	\$ 0.9575
IL	Pilot	Travel	Center	#1041	Carol Stream	\$ 0.9175
IL	Pilot	Travel	Center	#1042	Bridgeview	\$ 0.9575
IN	Pilot	Travel	Center	#28	Daleville	\$ 0.4750
IN	Pilot	Travel	Center	#29	Fremont	\$ 0.5350
IN	Pilot	Travel	Center	#30	Greenfield	\$ 0.5350
IN	Pilot	Travel	Center	#31	Highland	\$ 0.4350
IN	Pilot	Travel	Center	#34	Remington	\$ 0.4350
IN	Pilot	Travel	Center	#35	South Bend	\$ 0.4750
IN	Pilot	Travel	Center	#36	Valparaiso	\$ 0.3950
IN	Pilot	Travel	Center	#37	Whiteland	\$ 0.5150
IN	Pilot	Travel	Center	#152	Memphis	\$ 0.4250
IN	Pilot	Travel	Center	#198	Plymouth	\$ 0.4250
IN	Pilot	Travel	Center	#242	Shelbyville	\$ 0.4750
IN	Pilot	Travel	Center	#247	Crawfordsville	\$ 0.4750
IN	Pilot	Travel	Center	#271	Gary	\$ 0.4350
IN	Pilot	Travel	Center	#297	Terre Haute	\$ 0.5350
IN	Flying	J		#304	New Haven	\$ 0.5350
IN	Pilot	Travel	Center	#318	Indianapolis	\$ 0.5350
IN	Pilot	Travel	Center	#339	Covington	\$ 0.5750
IN	Pilot	Travel	Center	#362	Pendleton	\$ 0.4640
IN	Pilot	Travel	Center	#444	Brazil	\$ 0.5150
IN	Pilot	Travel	Center	#445	Burns Harbor	\$ 0.4750

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
IN	Pilot	Travel	Center	#446	Daleville	\$ 0.4750
IN	Pilot	Travel	Center	#447	Haubstadt	\$ 0.5150
IN	Pilot	Travel	Center	#448	Hebron	\$ 0.5350
IN	Pilot	Travel	Center	#478	Leavenworth	\$ 0.6150
IN	Road	Ranger		#531	Brazil	\$ 0.5040
IN	Road	Ranger		#542	Greenwood	\$ 0.5040
IN	Road	Ranger		#546	Lake Station	\$ 0.5395
IN	Flying	J		#647	Haubstadt	\$ 0.5150
IN	Flying	J		#649	Indianapolis	\$ 0.5350
IN	Flying	J		#650	Lake Station	\$ 0.4750
IN	Flying	J		#652	Lebanon	\$ 0.4550
IN	Flying	J		#653	Hebron	\$ 0.5350
IN	Flying	J		#655	Spiceland	\$ 0.4950
IN	Flying	J		#656	Whiteland	\$ 0.5150
IN	Mr.	Fuel		#719	Gary	\$ 0.3540
IN	Mr.	Fuel		#721	Indianapolis	\$ 0.4540
IN	Mr.	Fuel		#731	Spiceland	\$ 0.3640
IN	Pilot	Dealer		#881	Fort Wayne	\$ 0.5350
IN	Mr.	Fuel		#1020	Lake Station	\$ 0.4295
IN	Flying	J		#1086	Marion	\$ 0.5350
KS	Pilot	Dealer		#524	Kansas City	\$ 0.5696
KS	Flying	J		#657	Dodge City	\$ 0.6679
KS	Flying	J		#658	Emporia	\$ 0.5879
KS	Flying	J		#659	Salina	\$ 0.6286
KS	Pilot	Travel	Center	#903	Salina	\$ 0.7136
KS	Pilot	Travel	Center	#920	Colby	\$ 0.5579
KY	Pilot	Travel	Center	#41	Mount Sterling	\$ 1.0695
KY	Pilot	Travel	Center	#46	Franklin	\$ 0.6640
KY	Pilot	Travel	Center	#47	Georgetown	\$ 0.8240
KY	Pilot	Travel	Center	#48	Glendale	\$ 0.9495
KY	Pilot	Travel	Center	#49	Oak Grove	\$ 0.7240
KY	Pilot	Travel	Center	#50	Sulphur	\$ 0.9095
KY	Pilot	Travel	Center	#156	Madisonville	\$ 0.7985
KY	Pilot	Travel	Center	#231	Corbin	\$ 0.6840
KY	Pilot	Travel	Center	#240	Middlesboro	\$ 0.5740
KY	Pilot	Travel	Center	#278	Walton	\$ 0.9995
KY	Pilot	Travel	Center	#321	Walton	\$ 0.9995
KY	Pilot	Dealer		#351	Grayson	\$ 0.8885
KY	Pilot	Travel	Center	#353	Georgetown	\$ 0.7385
KY	Pilot	Travel	Center	#354	Simpsonville	\$ 1.0095
KY	Pilot	Travel	Center	#356	Shepherdsville	\$ 0.9495
KY	Pilot	Travel	Center	#358	Paducah	\$ 0.7785
KY	Pilot	Travel	Center	#392	Sonora	\$ 0.9495
KY	Pilot	Travel	Center	#399	Lebanon Junction	\$ 0.9495

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
KY	Pilot	Travel	Center	#437	Williamsburg	\$ 0.6840
KY	Pilot	Travel	Center	#438	Franklin	\$ 0.6640
KY	Pilot	Travel	Center	#439	Oak Grove	\$ 0.7240
KY	Pilot	Travel	Center	#440	Pendleton	\$ 0.9095
KY	Flying	J		#660	Catlettsburg	\$ 0.9385
KY	Flying	J		#661	Franklin	\$ 0.6640
KY	Flying	J		#662	Oak Grove	\$ 0.7240
KY	Flying	J		#663	Waddy	\$ 1.0095
KY	Flying	J		#664	Walton	\$ 1.0095
KY	Pilot	Dealer		#890	Kuttawa	\$ 0.8985
LA	Pilot	Travel	Center	#79	Denham Springs	\$ 0.5993
LA	Pilot	Travel	Center	#82	LaPlace	\$ 0.5993
LA	Pilot	Travel	Center	#199	Haughton	\$ 0.6793
LA	Pilot	Travel	Center	#274	Breaux Bridge	\$ 0.5393
LA	Pilot	Travel	Center	#300	Hammond	\$ 0.5593
LA	Pilot	Travel	Center	#335	Raville	\$ 0.7683
LA	Pilot	Travel	Center	#428	West Monroe	\$ 0.7283
LA	Flying	J		#665	Greenwood	\$ 0.7593
LA	Pilot	Travel	Center	#1051	Iowa	\$ 0.5993
MA	Separated	Gas	Island	#220	Sturbridge	\$ 0.8085
MA	Pilot	Travel	Center	#222	Sturbridge	\$ 0.8085
MD	Pilot	Travel	Center	#150	Hagerstown	\$ 0.7110
MD	Pilot	Travel	Center	#179	Hagerstown	\$ 0.6890
MD	Pilot	Travel	Center	#290	Perryville	\$ 0.9910
MD	Pilot	Travel	Center	#408	Grantsville	\$ 0.6910
MD	Flying	J		#784	Northeast	\$ 0.8910
MD	Flying	J		#875	Elkton	\$ 0.8910
MI	Pilot	Travel	Center	#17	Battle Creek	\$ 0.7000
MI	Pilot	Travel	Center	#21	Dexter	\$ 0.7200
MI	Pilot	Travel	Center	#23	Ionia	\$ 0.6800
MI	Pilot	Travel	Center	#24	Monroe	\$ 0.6800
MI	Pilot	Travel	Center	#26	Ottawa Lake	\$ 0.6555
MI	Pilot	Travel	Center	#284	Monroe	\$ 0.6800
MI	Pilot	Travel	Center	#296	Dexter	\$ 0.7200
MI	Pilot	Travel	Center	#596	Smiths Creek	\$ 0.4800
MI	Pilot	Travel	Center	#666	Benton Harbor	\$ 0.7910
MI	Flying	J		#667	Grand Ledge	\$ 0.6555
MI	Flying	J		#668	Saginaw	\$ 0.6800
MI	Flying	J	US	#895	Woodhaven	\$ 0.6800
MI	Pilot	Travel	Center	#1021	Holland	\$ 0.6200
MN	Pilot	Travel	Center	#134	St. Cloud	\$ 0.5820
MN	Flying	J		#576	Northfield	\$ 0.6520
MN	Pilot	Travel	Center	#581	Inver Grove Heights	\$ 0.5920
MN	Pilot	Travel	Center	#590	Alexandria	\$ 0.6320

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
MO	Pilot	Travel	Center	#44	Boonville	\$ 0.4780
MO	Pilot	Travel	Center	#167	Nevada	\$ 0.5780
MO	Pilot	Travel	Center	#208	Pacific	\$ 0.7335
MO	Pilot	Travel	Center	#252	Kearney	\$ 0.5380
MO	Pilot	Travel	Center	#301	Marston	\$ 0.6425
MO	Pilot	Travel	Center	#317	Joplin	\$ 0.4980
MO	Pilot	Travel	Center	#385	Collins	\$ 0.6180
MO	Pilot	Travel	Center	#442	Hayti	\$ 0.4825
MO	Pilot	Travel	Center	#443	Higginsville	\$ 0.4780
MO	Road	Ranger		#533	Fenton	\$ 0.5225
MO	Road	Ranger		#547	St. Robert	\$ 0.5580
MO	Flying	J		#571	Charleston	\$ 0.5025
MO	Flying	J		#669	Joplin	\$ 0.4980
MO	Flying	J		#671	Matthews	\$ 0.6425
MO	Flying	J		#672	Peculiar	\$ 0.6580
MO	Flying	J		#673	Sullivan	\$ 0.6535
MO	Flying	J		#674	Warrenton	\$ 0.4935
MO	Flying	J		#675	Wayland	\$ 0.5425
MO	Mr.	Fuel		#715	Foristell	\$ 0.4425
MO	Mr.	Fuel		#717	Villa Ridge	\$ 0.6125
MO	Mr.	Fuel		#718	Pevely	\$ 0.4025
MO	Flying	J		#768	Kansas City	\$ 0.4780
MO	Flying	J		#1061	Springfield	\$ 0.4325
MS	Pilot	Travel	Center	#77	Jackson	\$ 0.4966
MS	Pilot	Travel	Center	#174	New Albany	\$ 0.6231
MS	Pilot	Travel	Center	#261	Winona	\$ 0.6476
MS	Pilot	Travel	Center	#388	Meridian	\$ 0.4276
MS	The	Pantry		#519	Senatobia	\$ 0.5776
MS	Pilot	Travel	Center	#586	Moss Point	\$ 0.6676
MS	Flying	J		#676	Gulfport	\$ 0.6476
MS	Flying	J		#677	Olive Branch	\$ 0.6166
MS	Flying	J		#678	Pearl	\$ 0.4966
MT	Town	Pump		#905	Milltown	\$ 0.4560
MT	Town	Pump		#906	Columbus	\$ 0.4560
MT	Town	Pump		#907	Miles City	\$ 0.4360
MT	Town	Pump		#908	Rocker	\$ 0.4460
MT	Town	Pump		#909	Shelby	\$ 0.4460
MT	Town	Pump		#910	Three Forks	\$ 0.4460
MT	Town	Pump		#911	Superior	\$ 0.3960
MT	Town	Pump		#914	Missoula	\$ 0.4460
MT	Town	Pump		#915	Billings	\$ 0.4360
MT	Town	Pump		#916	Lolo	\$ 0.4560
MT	Town	Pump		#917	Great Falls	\$ 0.4360
MT	Town	Pump		#922	Columbia Falls	\$ 0.4060

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
MT	Town	Pump		#923	Billings	\$ 0.4360
MT	Town	Pump		#924	Butte	\$ 0.4360
MT	Town	Pump		#925	Great Falls	\$ 0.4260
MT	Flying	Broadway		#964	Hardin	\$ 0.4760
MT	Flying	Broadway		#968	Belgrade	\$ 0.4760
MT	Town	Pump		#1013	Belgrade	\$ 0.4560
MT	Town	Pump		#1015	Sidney	\$ 0.3860
NC	Pilot	Travel	Center	#56	Kannapolis	\$ 0.5930
NC	Pilot	Travel	Center	#57	Mebane	\$ 0.6075
NC	Pilot	Travel	Center	#58	Pleasant Hill	\$ 0.7030
NC	Pilot	Travel	Center	#6955	Haw River	\$ 0.6075
NC	Pilot	Travel	Center	#6978	Candor	\$ 0.5430
NC	Pilot	Travel	Center	#275	Charlotte	\$ 0.6030
NC	Pilot	Travel	Center	#6990	Kenly	\$ 0.5675
NC	Pilot	Travel	Center	#6996	Warsaw	\$ 0.4675
NC	Pilot	Travel	Center	#393	Waynesville	\$ 0.7030
NC	Flying	J	US	#549	Mount Airy	\$ 0.5785
NC	Flying	J		#682	Graham	\$ 0.6075
NC	Flying	J		#683	Kenly	\$ 0.6030
NC	The	Pantry		#885	Dunn	\$ 0.5840
NC	Pilot	Dealer		#900	Dunn	\$ 0.5840
NC	Pilot	Travel	Center	#1063	Marion	\$ 0.6530
NC	Pilot	Travel	Center	#7937	Mcleansville	\$ 0.5675
NC	Pilot	Travel	Center	#7971	Conover	\$ 0.6030
NC	Pilot	Travel	Center	#7976	Troutman	\$ 0.5475
NC	Pilot	Travel	Center	#7983	Salisbury	\$ 0.6985
NC	Pilot	Travel	Center	#7996	Monroe	\$ 0.2675
ND	Flying	J		#489	Grand Forks	\$ 0.5925
ND	Flying	J	US	#511	Mandan	\$ 0.6525
ND	Flying	J		#550	Minot	\$ 0.6525
ND	Pilot	Travel	Center	#589	Williston	\$ 0.7525
ND	Flying	J		#684	Beach	\$ 0.6525
ND	Flying	J		#685	Fargo	\$ 0.4525
NE	Flying	J		#686	Gretna	\$ 0.6375
NE	Flying	J		#687	North Platte	\$ 0.4905
NE	Pilot	Travel	Center	#901	Elm Creek	\$ 0.4518
NE	Bosselman	#902			Grand Island	\$ 0.4905
NE	Flying	J		#904	Big Springs	\$ 0.3505
NE	Pilot	Travel	Center	#912	Wood River	\$ 0.5575
NH	Pilot	Dealer		#896	Bow	\$ 0.9530
NJ	Pilot	Travel	Center	#190	Hampton (Clinton Area)	\$ 0.7425
NJ	Pilot	Travel	Center	#210	Mahwah	\$ 0.4425
NJ	Pilot	Travel	Center	#253	Carneys Point	\$ 0.3625
NJ	Pilot	Travel	Center	#280	Bloomsbury	\$ 0.7225

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
NJ	Flying	J		#688	Carneys Point	\$ 0.3625
NJ	Pilot	Dealer		#880	Montague	\$ 0.4035
NJ	Pilot	Dealer		#891	Roxbury	\$ 0.5035
NM	Pilot	Travel	Center	#163	Lordsburg	\$ 0.8149
NM	Pilot	Travel	Center	#266	Las Cruces	\$ 0.7749
NM	Flying	J		#305	Jamestown	\$ 0.9149
NM	Pilot	Travel	Center	#475	Moriarty	\$ 0.8749
NM	Pilot	Fuel	Center	#490	Carlsbad	\$ 0.8349
NM	Pilot	Travel	Center	#557	Hobbs	\$ 0.7749
NM	Flying	J		#689	Albuquerque	\$ 0.8349
NM	Flying	J		#690	Lordsburg	\$ 0.8149
NM	Flying	J		#691	Tucumcari	\$ 0.8672
NM	Pilot	Travel	Center	#1070	Santa Rosa	\$ 0.9059
NM	Pilot	Thomas	Cardlock	#8601	Artesia	\$ 0.8749
NM	Pilot	Thomas	Cardlock	#8604	Hobbs	\$ 0.8749
NM	Pilot	Thomas	Cardlock	#8605	Eunice	\$ 0.9749
NM	Pilot	Thomas	Cardlock	#8658	Hobbs	\$ 0.8749
NV	Pilot	Travel	Center	#147	West Wendover	\$ 0.6043
NV	Pilot	Travel	Center	#340	Fernley	\$ 0.7643
NV	Pilot	Travel	Center	#341	North Las Vegas	\$ 0.8753
NV	Pilot	Travel	Center	#387	Carlin	\$ 0.9043
NV	Pilot	Travel	Center	#485	Winnemucca	\$ 0.7043
NV	Flying	J	US	#513	Primm	\$ 0.8053
NV	Flying	J		#692	Wells	\$ 0.7643
NV	Flying	J		#770	Winnemucca	\$ 0.7043
NV	Flying	J	DLR	#966	Battle Mountain	\$ 1.0443
NV	Flying	J		#1005	Fernley	\$ 0.7643
NY	Pilot	Travel	Center	#146	Castleton - On - Hudson	\$ 0.7245
NY	Pilot	Travel	Center	#322	Bath (Kanona Area)	\$ 0.7845
NY	Pilot	Travel	Center	#380	Liverpool	\$ 0.7245
NY	Pilot	Travel	Center	#394	Newburgh	\$ 0.8845
NY	Pilot	Travel	Center	#494	Rotterdam	\$ 0.7145
NY	Flying	J		#693	Pembroke	\$ 0.7045
OH	Pilot	Travel	Center	#2	Austintown	\$ 0.8625
OH	Pilot	Travel	Center	#3	Austintown	\$ 0.8325
OH	Pilot	Travel	Center	#4	Avon	\$ 0.8025
OH	Pilot	Travel	Center	#6	Cambridge	\$ 0.8925
OH	Pilot	Travel	Center	#8	Circleville	\$ 0.8325
OH	Pilot	Travel	Center	#9	Franklin	\$ 0.6925
OH	Pilot	Travel	Center	#11	North Lima	\$ 0.7325
OH	Pilot	Travel	Center	#12	Perrysburg	\$ 0.8580
OH	Pilot	Travel	Center	#13	Seville	\$ 0.8725
OH	Pilot	Travel	Center	#14	Sunbury	\$ 0.9325
OH	Pilot	Travel	Center	#15	Toledo	\$ 0.8280

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
OH	Pilot	Travel	Center	#16	Wilmington	\$ 0.7725
OH	Flying J			#97	Vandalia	\$ 0.8235
OH	Pilot	Travel	Center	#130	Richfield	\$ 0.8325
OH	Pilot	Travel	Center	#213	Columbus	\$ 0.8725
OH	Pilot	Travel	Center	#239	Upper Sandusky	\$ 0.8280
OH	Pilot	Travel	Center	#281	Girard	\$ 0.8325
OH	Pilot	Travel	Center	#285	Hebron	\$ 0.8925
OH	Pilot	Travel	Center	#286	Eaton	\$ 0.9325
OH	Pilot	Travel	Center	#287	Burbank	\$ 0.8725
OH	Pilot	Travel	Center	#303	Napoleon	\$ 0.7480
OH	Pilot	Travel	Center	#309	Caldwell	\$ 0.7925
OH	Pilot	Travel	Center	#360	Findlay	\$ 0.7680
OH	Pilot	Travel	Center	#449	Belmont	\$ 0.8325
OH	Pilot	Travel	Center	#454	London	\$ 0.9325
OH	Pilot	Travel	Center	#455	Marengo	\$ 0.9325
OH	Pilot	Travel	Center	#457	Beaver Dam	\$ 0.7880
OH	Pilot	Travel	Center	#469	Canton	\$ 0.8325
OH	Flying J			#552	Lebanon	\$ 0.8325
OH	Pilot	Travel	Center	#597	Chillicothe	\$ 0.7925
OH	Flying J			#694	Austintburg	\$ 0.8625
OH	Flying J			#695	Beaverdam	\$ 0.7880
OH	Flying J			#696	Berkshire	\$ 0.9325
OH	Flying J			#697	Hubbard	\$ 0.8325
OH	Flying J			#698	Jeffersonville	\$ 0.7525
OH	Flying J			#699	Millersport	\$ 0.8925
OH	Flying J			#700	Lake Township	\$ 0.8580
OH	Mr.	Fuel		#732	Girard	\$ 0.7925
OK	Pilot	Travel	Center	#196	Roland	\$ 0.7235
OK	Pilot	Travel	Center	#259	Muskogee	\$ 0.3025
OK	Pilot	Travel	Center	#460	Oklahoma City	\$ 0.6835
OK	Pilot	Travel	Center	#498	Atoka	\$ 0.6880
OK	Pilot	Dealer		#506	Enid	\$ 0.6490
OK	Pilot	Dealer		#556	Choctaw	\$ 0.7845
OK	Flying J			#701	Ardmore	\$ 0.6125
OK	Flying J			#702	Checotah	\$ 0.7835
OK	Flying J			#703	Oklahoma City	\$ 0.6835
OK	Flying J			#704	Edmond	\$ 0.6235
OK	Flying J			#705	Savre	\$ 0.7735
OK	Flying J			#706	Tulsa	\$ 0.4235
OK	Pilot	Travel	Center	#1004	Tonkawa	\$ 0.6235
OR	Pilot	Travel	Center	#133	Chemult	\$ 0.6492
OR	Pilot	Travel	Center	#195	Wasco	\$ 0.5492
OR	Pilot	Travel	Center	#232	Ontario	\$ 0.6492
OR	Pilot	Travel	Center	#233	Oakland	\$ 0.5492

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
OR	Pilot	Travel	Center	#386	Brooks	\$ 0.4692
OR	Pilot	Travel	Center	#390	Stanfield	\$ 0.4847
OR	Pilot	Travel	Center	#391	Central Point	\$ 0.6492
OR	Pilot	Travel	Center	#504	Klamath Falls	\$ 0.5092
OR	Flying J			#584	Aurora	\$ 0.5092
OR	Flying J		Franchise	#934	LaGrande	\$ 0.6137
PA	Pilot	Travel	Center	#1	Mill Hall	\$ 0.4907
PA	Pilot	Travel	Center	#81	Portersville (New Castle Area)	\$ 0.5107
PA	Pilot	Travel	Center	#4563	Harrisburg	\$ 0.3765
PA	Pilot	Travel	Center	#245	Harrisburg	\$ 0.3907
PA	Pilot	Travel	Center	#298	Drums	\$ 0.4907
PA	Pilot	Travel	Center	#311	Erie	\$ 0.4907
PA	Pilot	Travel	Center	#336	DuBois	\$ 0.3507
PA	Pilot	Travel	Center	#348	Bentleyville	\$ 0.4107
PA	Pilot	Travel	Center	#370	Pittston	\$ 0.4907
PA	All	American		#516	Breezewood	\$ 0.4517
PA	Pilot	Travel	Center	#517	Duncannon	\$ 0.4107
PA	Flying J			#518	Erystown	\$ 0.3507
PA	Pilot	Dealer		#522	Pine Grove	\$ 0.4817
PA	Flying J		US	#555	Milton	\$ 0.5817
PA	Flying J			#620	Smithton	\$ 0.4107
PA	Flying J			#707	Brookville	\$ 0.3507
PA	Flying J			#708	Carlisle	\$ 0.3307
PA	Flying J			#709	Mill Hall	\$ 0.4907
PA	Flying J			#710	New Milford	\$ 0.4507
PA	Pilot	Dealer		#871	Pine Grove	\$ 0.4817
SC	Pilot	Travel	Center	#60	Bowman	\$ 0.9605
SC	Pilot	Travel	Center	#61	Clinton	\$ 0.9605
SC	Pilot	Travel	Center	#62	Florence	\$ 0.9605
SC	Pilot	Travel	Center	#63	Piedmont	\$ 0.8005
SC	Pilot	Travel	Center	#64	Summerville	\$ 0.9605
SC	Pilot	Travel	Center	#4566	Blacksburg	\$ 0.8160
SC	Pilot	Travel	Center	#4567	Rock Hill	\$ 0.7205
SC	Pilot	Travel	Center	#4568	Graniteville	\$ 0.9405
SC	Pilot	Travel	Center	#4569	Hardeeville	\$ 1.0005
SC	Pilot	Travel	Center	#4576	St. George	\$ 1.0360
SC	Pilot	Travel	Center	#4578	Winnsboro	\$ 0.8405
SC	Pilot	Travel	Center	#4579	St. Matthews	\$ 0.9605
SC	Pilot	Travel	Center	#4580	Prosperity	\$ 0.9250
SC	Pilot	Travel	Center	#4581	Bishopville	\$ 0.9650
SC	Pilot	Travel	Center	#4584	Latta	\$ 0.9250
SC	Pilot	Travel	Center	#310	Duncan	\$ 0.8005
SC	Pilot	Travel	Center	#337	Florence	\$ 0.9605
SC	Pilot	Travel	Center	#338	Cayce (Columbia Area)	\$ 0.9405

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
SC	Pilot	Travel	Center	#346	Lugoff	\$ 0.9605
SC	Pilot	Travel	Center	#453	Gaffney	\$ 0.7805
SC	Flying	J		#493	St. George	\$ 1.0005
SC	Flying	J		#711	Blacksburg	\$ 0.7805
SC	Flying	J		#712	Columbia	\$ 0.9005
SC	Flying	J		#713	Latta	\$ 0.9605
SC	Flying	J		#714	Rock Hill	\$ 0.7205
SC	The	Pantry		#884	Campobello	\$ 0.9615
SC	Pilot	Travel	Center	#1082	N. Charleston	\$ 1.0005
SD	Pilot	Travel	Center	#599	Murdo	\$ 0.5885
SD	Flying	J		#716	Sioux Falls	\$ 0.6390
SD	Pilot	Travel	Center	#918	Rapid City	\$ 0.3685
SD	Flying	J	Franchise	#931	Rapid City	\$ 0.7285
SD	Flying	J	Franchise	#932	Hermosa	\$ 0.3585
TN	Pilot	Travel	Center	#51	Greeneville	\$ 0.7060
TN	Pilot	Travel	Center	#52	Laverne	\$ 0.5660
TN	Pilot	Travel	Center	#53	Hurricane Mills	\$ 0.6060
TN	Pilot	Food	Mart	#106	Knoxville	\$ 0.6305
TN	Pilot	Travel	Center	#114	Crossville	\$ 0.5660
TN	Pilot	Travel	Center	#4596	White Pine	\$ 0.5705
TN	Pilot	Travel	Center	#4597	Gordonsville	\$ 0.5705
TN	Pilot	Travel	Center	#4598	Niota	\$ 0.5505
TN	Pilot	Travel	Center	#4599	Monteagle	\$ 0.5705
TN	Pilot	Food	Mart	#132	Kingston	\$ 0.5505
TN	Pilot	Travel	Center	#149	Stanton	\$ 0.5705
TN	Pilot	Travel	Center	#219	Knoxville	\$ 0.6060
TN	Pilot	Travel	Center	#224	Pioneer	\$ 0.6660
TN	Pilot	Travel	Center	#226	Dandridge	\$ 0.6060
TN	Pilot	Food	Mart	#241	Knoxville	\$ 0.6305
TN	Pilot	Travel	Center	#265	Cookeville	\$ 0.6060
TN	Pilot	Travel	Center	#270	Knoxville	\$ 0.5760
TN	Pilot	Travel	Center	#363	Memphis	\$ 0.5905
TN	Pilot	Travel	Center	#366	Jackson	\$ 0.6305
TN	Pilot	Travel	Center	#403	Heiskell	\$ 0.7060
TN	Pilot	Travel	Center	#404	Murfreesboro	\$ 0.5660
TN	Pilot	Travel	Center	#405	Memphis	\$ 0.5905
TN	Pilot	Travel	Center	#406	Cornersville	\$ 0.6505
TN	Pilot	Travel	Center	#409	Dickson	\$ 0.6060
TN	Pilot	Travel	Center	#411	Lebanon	\$ 0.5660
TN	Pilot	Travel	Center	#412	White Pine	\$ 0.6060
TN	Pilot	Travel	Center	#413	Nashville	\$ 0.6660
TN	Pilot	Travel	Center	#481	McDonald	\$ 0.5660
TN	Flying	J		#720	Fairview	\$ 0.6060
TN	Flying	J		#722	Knoxville	\$ 0.6160

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
TN	Pilot	Travel	Center	#1577	Pioneer	\$ 0.6305
TX	Pilot	Travel	Center	#157	Sulphur Springs	\$ 0.4862
TX	Pilot	Travel	Center	#206	Weatherford	\$ 0.6262
TX	Pilot	Travel	Center	#209	Van Horn	\$ 0.8062
TX	Pilot	Travel	Center	#234	Huntsville	\$ 0.6616
TX	Pilot	Travel	Center	#257	Midland	\$ 0.7639
TX	Pilot	Travel	Center	#306	San Antonio	\$ 0.6039
TX	Pilot	Travel	Center	#330	New Braunfels	\$ 0.6039
TX	Pilot	Travel	Center	#367	Caddo Mills	\$ 0.4839
TX	Pilot	Travel	Center	#375	Houston	\$ 0.6416
TX	Pilot	Travel	Center	#377	Laredo	\$ 0.5862
TX	Pilot	Travel	Center	#431	Orange	\$ 0.6439
TX	Pilot	Travel	Center	#432	Robinson	\$ 0.4662
TX	Pilot	Travel	Center	#433	Dallas	\$ 0.4839
TX	Pilot	Travel	Center	#434	Fort Worth	\$ 0.3362
TX	Pilot	Travel	Center	#435	Anthony	\$ 0.6462
TX	Pilot	Travel	Center	#436	Amarillo	\$ 0.6239
TX	Pilot	Travel	Center	#467	San Antonio	\$ 0.5639
TX	Pilot	Travel	Center	#472	Beasley	\$ 0.6016
TX	Flying J			#477	Anna	\$ 0.4462
TX	Pilot	Travel	Center	#486	Tyler	\$ 0.4262
TX	Flying J			#488	Cotulla	\$ 0.6439
TX	Flying J		US	#507	Jarrell	\$ 0.5572
TX	Flying J		US	#551	Cisco	\$ 0.6772
TX	Flying J			#553	Fort Stockton	\$ 0.6862
TX	Flying J			#554	George West	\$ 0.6639
TX	Pilot	Travel	Center	#559	Big Spring	\$ 0.7039
TX	Pilot	Travel	Center	#568	Von Ormy	\$ 0.6039
TX	Flying J			#580	Odessa	\$ 0.7639
TX	Flying J			#723	Amarillo	\$ 0.6239
TX	Flying J			#724	Anthony	\$ 0.6462
TX	Flying J			#725	Baytown	\$ 0.7616
TX	Flying J			#726	Dallas	\$ 0.4839
TX	Flying J			#727	Edinburg	\$ 0.7862
TX	Flying J			#728	El Paso	\$ 0.6062
TX	Flying J			#729	Houston	\$ 0.6616
TX	Flying J			#730	Laredo	\$ 0.5862
TX	Flying J			#733	Lubbock	\$ 0.6039
TX	Flying J			#734	New Caney	\$ 0.7216
TX	Flying J			#735	Orange	\$ 0.6439
TX	Flying J			#736	Pecos	\$ 0.6462
TX	Flying J			#737	San Antonio	\$ 0.6039
TX	Flying J			#738	Tye	\$ 0.6462
TX	Flying J			#739	Waco	\$ 0.4662

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
TX	Flying	J		#740	Brookshire	\$ 0.7016
TX	Flying	J		#741	Wichita Falls	\$ 0.6862
TX	The	Pantry		#883	Canton	\$ 0.5172
TX	Pilot	Dealer		#887	Snyder	\$ 0.6349
TX	Pilot	Dealer		#888	Tulia	\$ 0.7872
TX	Pilot	Dealer		#894	Eagle Pass	\$ 0.9049
TX	Pilot	Travel	Center	#1001	Big Lake	\$ 0.8039
TX	Pilot	Travel	Center	#1002	Tilden	\$ 0.6039
TX	Pilot	Travel	Center	#1003	Childress	\$ 0.5239
TX	Pilot	Travel	Center	#1006	Junction	\$ 0.7439
TX	Pilot	Travel	Center	#1023	Lufkin	\$ 0.6462
TX	Flying	J		#1025	Channelview	\$ 0.7616
TX	Pilot	Travel	Center	#1026	Carrizo Springs	\$ 0.7039
TX	Pilot	Travel	Center	#1027	Vega	\$ 0.5839
TX	Pilot	Travel	Center	#1028	Buffalo	\$ 0.6039
TX	Flying	J		#1033	Midland	\$ 0.7639
TX	Pilot	Travel	Center	#1054	Mustang Ridge	\$ 0.6439
TX	Flying	J		#1057	Pasadena	\$ 0.6616
TX	Pilot	Travel	Center	#1059	Schulenburg	\$ 0.7616
TX	Pilot	Travel	Center	#1083	Stratford	\$ 0.6439
TX	Pilot	Thomas	Cardlock	#8616	Andrews	\$ 0.7062
TX	Pilot	Thomas	Cardlock	#8621	Midland	\$ 0.8062
TX	Pilot	Thomas	Cardlock	#8624	Odessa	\$ 0.8062
TX	Pilot	Thomas	Cardlock	#8625	Odessa	\$ 0.8062
TX	Pilot	Thomas	Cardlock	#8628	Big Spring	\$ 0.7462
TX	Pilot	Thomas	Cardlock	#8630	Crane	\$ 0.9062
UT	Pilot	Thomas	Cardlock	#108	Vernal	\$ 0.8603
UT	Pilot	Thomas	Cardlock	#109	Vernal	\$ 0.8603
UT	Pilot	Fuel	Center	#140	Roosevelt	\$ 0.8403
UT	Pilot	Travel	Center	#294	Ogden	\$ 0.5027
UT	Pilot	Dealer		#508	Perry	\$ 0.4413
UT	Flying	J	US	#509	Beaver	\$ 0.5413
UT	Flying	J	US	#510	Scipio	\$ 0.4813
UT	Flying	J		#742	Lake Point	\$ 0.5803
UT	Flying	J		#743	Nephi	\$ 0.5403
UT	Flying	J		#744	Ogden	\$ 0.5027
UT	Flying	J		#746	Salt Lake City	\$ 0.5027
UT	Flying	J		#747	Springville	\$ 0.4403
UT	Flying	J		#748	Willard	\$ 0.4403
UT	Flying	J		#772	North Salt Lake	\$ 0.4403
UT	Flying	J		#773	Richfield	\$ 0.6003
UT	Flying	J		#774	Snowville	\$ 0.6627
UT	Pilot	Travel	Center	#775	St. George	\$ 0.7403
UT	Pilot	Dealer		#892	Green River	\$ 0.7413

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station
UT		#3822			Salt Lake City	\$ 0.7413
VA	Pilot	Travel	Center	#4619	Wytheville	\$ 0.6393
VA	Pilot	Travel	Center	#4622	South Boston	\$ 0.4638
VA	Pilot	Travel	Center	#159	Providence Forge (Tallysville Area)	\$ 0.5993
VA	Pilot	Travel	Center	#4642	Tom's Brook	\$ 0.6038
VA	Pilot	Travel	Center	#4649	Raphine	\$ 0.5793
VA	Pilot	Travel	Center	#4651	Skippers	\$ 0.4638
VA	Pilot	Travel	Center	#4656	Disputanta	\$ 0.4438
VA	Pilot	Travel	Center	#256	Danville	\$ 0.4993
VA	Pilot	Travel	Center	#258	Troutville	\$ 0.6293
VA	Pilot	Travel	Center	#384	Colonial Heights (Richmond Area)	\$ 0.5793
VA	Pilot	Travel	Center	#396	Staunton	\$ 0.6793
VA	Pilot	Travel	Center	#491	Harrisonburg	\$ 0.7393
VA	Flying	J		#749	Carmel Church	\$ 0.3993
VA	Flying	J		#750	Fort Chiswell	\$ 0.6393
VA	Flying	J		#752	Winchester	\$ 0.6793
VA	Mr.	Fuel		#753	Ruther Glen	\$ 0.3538
VA	Flying	J		#754	Wytheville	\$ 0.6393
VA	Flying	J		#876	Ruther Glen	\$ 0.3993
VA	Pilot	Dealer		#898	Emporia	\$ 0.4903
VA	Pilot	Dealer		#899	South Hill	\$ 0.5903
WA	Pilot	Travel	Center	#151	Tumwater	\$ 0.6160
WA	Pilot	Travel	Center	#583	Ferndale	\$ 0.5805
WA	Flying	J	DLR	#963	Spokane	\$ 1.0905
WA	Flying	J	DLR	#965	Ellensburg	\$ 1.0905
WA	Flying	J	DLR	#967	Spokane	\$ 1.1305
WA	Flying	J	DLR	#970	Pasco	\$ 0.9505
WI	Pilot	Travel	Center	#40	Oak Creek	\$ 0.7160
WI	Pilot	Travel	Center	#164	Mauston	\$ 0.7060
WI	Pilot	Travel	Center	#289	Beloit	\$ 0.8157
WI	Pilot	Travel	Center	#324	Franksville	\$ 0.7260
WI	Flying	J	#470		Roberts	\$ 0.6805
WI	Road	Ranger	#528		Cottage Grove	\$ 0.6970
WI	Road	Ranger	#538		Oakdale	\$ 0.8060
WI	Road	Ranger	#544		East Troy	\$ 0.7160
WI	Flying	J	#756		Black River Falls	\$ 0.6205
WV	Pilot	Travel	Center	#243	Nitro	\$ 0.7045
WV	Pilot	Travel	Center	#474	Sutton	\$ 0.7045
WV	Pilot	Travel	Center	#503	Morgantown	\$ 0.7645
WY	Pilot	Thomas	Cardlock	#102	Rock Springs	\$ 0.7485
WY	Pilot	Travel	Center	#141	Evanston	\$ 0.6085
WY	Pilot	Travel	Center	#308	Laramie	\$ 0.5795
WY	Pilot	Travel	Center	#402	Cheyenne	\$ 0.6595
WY	Flying	J		#758	Casper	\$ 0.5085

State	Store	Info 1	Info 2	Info 3	City	Total Margin At Station	
WY	Flying	J		#759	Cheyenne	\$	0.6595
WY	Flying	J		#760	Cokeville	\$	0.9485
WY	Flying	J		#761	Evanston	\$	0.6085
WY	Flying	J		#762	Gillette	\$	0.5485
WY	Flying	J		#763	Rawlins	\$	0.7195
WY	Flying	J		#764	Rock Springs	\$	0.7085

Loves Ethanol
5 Dec 2016

Loves Ethanol 5 Dec 2016

		Delivered Price	Ethanol Price without RIN	Ethanol Price without LCFS
E100 FOB	\$1.5700	\$1.7900	\$1.6840	\$0.3098
(RIN)	\$1.0600			
(CI)	\$92.0000	\$1.3742		
National Average RBOB	\$1.5575			
Terminal Cost	\$0.0200			

Loves Ethanol 5 Dec 2016

Account	State	Location	C.O.	Address	Retail	Inv.	RBOB		Landed Portion	This Price	RIN Incentive	E-10 Minus RIN Pay		E-10 Margin
							Wholesale	RBOB Portion				Terminal	Margin	
368 AL	Alabama	Montgomery	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1652	
375 AL	Alabama	Montgomery	1610 Hwy 94	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
381 AL	Alabama	Montgomery	1610 Hwy 94	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
416 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
421 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
422 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
423 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
424 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
425 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
426 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
427 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
428 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
429 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
430 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
431 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
432 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
433 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
434 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
435 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
436 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
437 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
438 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
439 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
440 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
441 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
442 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808	0.1352	
443 AL	Alabama	Haslet	1600 Hwy 10	\$	2,672.50	0.3500	1.66	0.4718	0.1790	1.5808	0.1000	1.4808		

[illegible]

[illegible]

State	City	Address	Total	Rent	Wholesale	RHOB Rent	Landed Portion	FIO Price	RIN Incentive	FIO Margin 20% Plus	FIO Margin
TX	Dallas	9701 E. Eastman Ave.	\$ 1.86	\$ 0.3800	\$ 1.48	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.0043
TX	Dallas	1000 E. 15th St.	\$ 1.09	\$ 0.3800	\$ 1.61	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1353
TX	Dallas	6025 W. LBJ Fwy	\$ 1.00	\$ 0.3800	\$ 1.52	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.0043
TX	Dallas	224 N. Main Ave.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 E. Expressway 281	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000
TX	Dallas	1000 E. Ross St.	\$ 2.00	\$ 0.3800	\$ 1.62	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1417
TX	Dallas	1000 Harrison Blvd.	\$ 1.85	\$ 0.3800	\$ 1.58	\$ 1.4018	\$ 0.1790	\$ 1.5808	\$ 0.1000	\$ 1.4748	\$ 0.1000

Store	State	City	Address	Total	Exc	Wholesale	RBOE Portion	Ethanol Portion	EDF Fee	R/S Incentive	EDF Allowance RPS Pkg	Terminal	Exc. Charge
2285	VA	Warner	2010 Charleston Rd	\$	2.16	\$	0.5100	\$	1.65	\$	1.4000	\$	0.1723
2286	VA	Richmond	1000 W. College Dr	\$	1.40	\$	0.4200	\$	1.48	\$	1.4000	\$	0.1640
2287	VA	Manassas	10740 Old Rd	\$	2.28	\$	0.4200	\$	1.78	\$	1.4000	\$	0.1640

Loves Biodiesel
5 Dec 2016

Loves Biodiesel 5 Dec 2016

	SME Biodiesel	Delivered Price	Biodiesel without RIN	Biodiesel without LCFS
B100 with RIN	\$3.2900	\$3.5300	\$1.7375	\$0.4277
(RIN)	\$1.1950			
(Excise)	\$1.0000			
(CI)	\$92.0000			
National Average Diesel	\$1.6200			

Loves Biodiesel 5 Dec 2016

[illegible]

State	City	Address	House	Tax	Wholesale Diesel	Retail Diesel	Wholesale Propane	Diesel Blend Price	Diesel Blend Margin	RIS BTC and LCFS Margin by Application	Diesel Blend Margin with AF Incentives		
411	LA	31420 Hickman Road	5	2.45	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
412	LA	32315 Ardmore Blvd	5	2.35	0.5700	5	9%	1.450	0.35	1.81	0.2195	0.38	0.50
413	LA	24000 10th St	5	2.00	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
414	LA	100 East Street	5	2.45	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
415	LA	16535 S. Hill Rd	5	2.35	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
416	LA	366 Colquhoun Dr	5	2.30	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
417	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
418	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
419	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
420	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
421	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
422	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
423	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
424	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
425	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
426	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
427	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
428	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
429	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
430	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
431	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
432	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
433	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
434	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
435	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
436	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
437	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
438	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
439	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
440	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
441	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
442	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
443	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
444	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
445	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
446	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
447	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
448	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
449	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
450	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
451	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
452	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
453	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
454	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
455	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
456	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
457	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
458	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
459	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
460	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
461	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
462	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
463	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
464	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
465	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
466	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
467	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
468	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
469	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
470	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
471	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
472	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
473	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
474	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
475	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
476	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
477	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
478	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
479	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
480	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
481	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
482	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
483	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
484	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
485	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
486	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
487	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
488	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
489	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
490	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
491	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
492	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
493	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
494	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
495	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
496	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
497	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
498	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
499	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
500	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
501	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
502	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
503	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
504	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
505	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50
506	LA	10000 4th St	5	2.60	0.5700	5	10%	1.450	0.35	1.81	0.2195	0.38	0.50

[illegible]

[illegible]

Loves Ethanol and Biodiesel Total
5 Dec 2016

Loves Ethanol and Biodiesel Total 21 Dec 2016

Store	State	City	Address	Total Margin At Station
368	AL	Clanton	300 Arby Dr.	\$ 0.6542
225	AL	Evergreen	16101 Hwy 84	\$ 0.6242
381	AL	Falkville	64 E. Pike Rd.	\$ 0.5842
466	AL	Jasper	83 Carl Cannon Blvd	\$ 0.6842
206	AL	Loxley	126 E. Flying K Rd.	\$ 0.5242
227	AL	McCalla	22183 Hwy 216	\$ 0.5842
530	AL	Moody	I-20, Exit 147	\$ 0.5842
580	AL	Muscle Shoals	2048 Hwy 20	\$ 0.6242
566	AL	Ozark	3771 S Hwy 231	\$ 0.6242
624	AL	Prichard	2600 W I-65 Service Rd N	\$ 0.6242
577	AL	Shorter	431 Main St.	\$ 0.7242
304	AL	Steele	905 Steele Station Rd.	\$ 0.5642
671	AR	Blytheville	3910 South Division Street	\$ 0.7153
607	AR	Jonesboro	5101 East Parker Rd	\$ 0.6153
457	AR	Little Rock	11700 I-30	\$ 0.5153
267	AR	Morrilton	1600 N. Hwy 95	\$ 0.5753
236	AR	North Little Rock	11801 E. I-40	\$ 0.5753
271	AR	Ozark	2229 N 3rd Street	\$ 0.6153
275	AR	Palestine	1010 N. Main	\$ 0.6153
277	AR	Prescott	116 Ron Herrod Rd.	\$ 0.6153
557	AR	Searcy	2505 Queensway St.	\$ 0.5753
450	AR	West Memphis	800 Martin Luther King Dr.	\$ 0.6153
460	AZ	Benson	643 S. Highway 90	\$ 0.8233
280	AZ	Buckeye	1610 S. Miller Road	\$ 0.7033
265	AZ	Casa Grande	5000 N. Sunland Gin Rd.	\$ 0.5633
328	AZ	Chandler	7001 W. Sundust Rd.	\$ 0.5943
296	AZ	Gila Bend	820 W. Pima	\$ 1.0033
278	AZ	Joseph City	4703 Main St.	\$ 0.8033
272	AZ	Kinaman	6035 E. Minerva Lane	\$ 0.7033
386	AZ	Lake Havasu City	14875 S. Hwy 95	\$ 0.6433
286	AZ	Quartzsite	760 S. Quartzsite Blvd.	\$ 0.8033
659	AZ	Tolleson	8313 Roosevelt St	\$ 0.6033
553	AZ	Williams	I-40 Exit 163	\$ 0.8033
349	AZ	Yuma	2931 E. Gila Ridge Rd	\$ 0.7933
374	CA	Barstow	2974 Lenwood Rd.	\$ 1.1483

Store	State	City	Address	Total Margin At Station
207	CA	Coachella	45-761 Dillon Rd.	\$ 1.1883
410	CA	Cornning	2120 South Ave.	\$ 1.1483
538	CA	Lodi	15250 North Thornton Rd	\$ 0.9683
230	CA	Lost Hills	21948 Hwy 46	\$ 0.9083
223	CA	Ripon	1553 Colony Rd.	\$ 0.6683
441	CA	Santa Nella	29025 West Plaza Dr.	\$ 1.0883
392	CA	Tehachapi	2000 East Tehachapi Blvd.	\$ 1.1883
382	CA	Tulare	2700 S. Blackstone St.	\$ 1.1483
300	CO	Bennett	1191 S. 1st Street	\$ 0.6133
644	CO	Burlington	582 S Lincoln St	\$ 0.6733
653	CO	Eads	15596 Hwy 287	\$ 0.6733
517	CO	Grand Junction	748 22 Road	\$ 0.4733
377	CO	Hudson	201 East Bison Hwy	\$ 0.5733
23	CO	Lamar	605 N. Main	\$ 0.6733
226	CO	Pueblo	6470 N. Elizabeth St	\$ 0.6733
228	FL	Auburndale	1800 Hwy 559	\$ 0.7256
453	FL	Cottondale	2510 Hwy 231	\$ 0.6856
627	FL	Davenport	45000 Hwy 27	\$ 0.6856
415	FL	Fort Pierce	7150 Okeechobee Rd	\$ 0.7256
467	FL	Fort Pierce	200 S. King Highway	\$ 0.7256
620	FL	Hawthorne	5615 SE US Hwy 301	\$ 0.7856
603	FL	Jacksonville	400 Pecan Park Road	\$ 0.7856
470	FL	Jasper	11459 SW 61st Way	\$ 0.7856
379	FL	Lee	3204 SE County Rd. 255	\$ 0.8256
561	FL	Mossy Head	17750 Hwy 285 Drive S	\$ 0.8256
495	FL	North Fort Myers	17308 Park 78 Drive	\$ 0.6856
363	FL	Ocala	I-75 at West Hwy 326 Exit 358	\$ 0.7056
316	FL	Ormond Beach	1657 US Hwy 1	\$ 0.7856
405	GA	Brunswick	2766 US Hwy 17 S.	\$ 0.6816
320	GA	Dublin	3009 Hwy 257	\$ 0.6616
359	GA	Emerson	I-75 Exit 283 at Allatoona Road	\$ 0.6126
376	GA	Hogansville	1621 Bass Cross Rd.	\$ 0.6616
307	GA	Jackson	115 Truckstop Way	\$ 0.5716
338	GA	Richmond Hill	8436 Ford Ave.	\$ 0.6216
354	GA	Thomson	2129 Washington Rd. NW	\$ 0.6816

Store	State	City	Address	Total Margin At Station
325	GA	Tifton	178 Southwell Blvd.	\$ 0.6216
311	GA	Waco	523 Atlantic Ave.	\$ 0.6216
411	IA	Clive	11820 Hickman Road	\$ 0.6828
476	IA	Davenport	8255 Northwest Blvd	\$ 0.5228
361	IA	Newton	4400 S. 22nd Ave. E.	\$ 0.6228
426	IA	Shelby	10 East Street	\$ 0.6328
479	IA	Sioux City	2525 Singing Hills Blvd	\$ 0.5228
334	ID	Heyburn	260 Centennial Dr.	\$ 0.5033
478	ID	Idaho Falls	6737 South 45th West	\$ 0.7033
301	ID	Post Falls	I-90, Exit 2	\$ 0.3121
292	IL	Dwight	12 W. Northbrook Drive	\$ 0.5497
384	IL	Greenville	1900 S. State Rd. 127	\$ 0.7297
578	IL	Hamel	I-55 Exit 30	\$ 0.7297
318	IL	Ina	202 North Ave.	\$ 0.6697
395	IL	Kankakee	3407 South State Road 45/52	\$ 0.7697
367	IL	Le Roy	505 S. Persimmon Dr.	\$ 0.6297
583	IL	New Baden	8690 Richter School Rd	\$ 0.7697
529	IL	Oglesby	1001 W. Walnut St.	\$ 0.5697
322	IL	Roscoe	13477 Quality Dr.	\$ 0.6697
606	IL	South Holland	1533 E. 162nd Street	\$ 1.0260
351	IL	Utica	3020 E. 8th Rd.	\$ 0.5497
249	IL	Williamsville	991 Ann Rutledge Rd.	\$ 0.4997
551	IN	Angola	3443 W. Maumee Street	\$ 0.6726
254	IN	Belleville	I-70, SR 39, Exit 59	\$ 0.6126
394	IN	Demotte	I-65, Exit 230	\$ 0.5726
417	IN	Gary	3150 Grant St.	\$ 0.4626
414	IN	Haubstadt	901 East 1250 South	\$ 0.4126
601	IN	Knightstown	6190 South State Route 109	\$ 0.5726
323	IN	Marion	253 Tippy Ditch Dr.	\$ 0.5726
355	IN	Memphis	13615 Blue Lick Rd.	\$ 0.5726
600	IN	Pendleton	I-69 Exit 214 at SR 13	\$ 0.7126
319	IN	Pittsboro	780 Jeff Gordon Blvd.	\$ 0.6926
633	IN	Plymouth	2952 Gary Drive	\$ 0.5726
222	IN	Richmond	2698 US 35 N.	\$ 0.7126
391	IN	Saint Paul	7880 N. Old US Hwy 421	\$ 0.5726

Store	State	City	Address	Total Margin At Station
664	IN	Terre Haute	1730 E. Harlan Drive	\$ 0.6126
451	IN	Whiteland	5115 N. 300 E.	\$ 0.5726
459	IN	Whitestown	4155 South Indianapolis Road	\$ 0.6726
592	IN	Woodburn	5959 N SR 101	\$ 0.6126
647	KS	Belleville	1356 US HWY 81	\$ 0.4887
558	KS	Dodge City	Hwy 400/56/283 and Trail Street	\$ 0.4734
455	KS	Ellis	200 Washington Street	\$ 0.5087
656	KS	Holcomb	1500 N Jones Ave	\$ 0.3087
632	KS	Liberal	1000 E Pancake Blvd	\$ 0.5434
608	KS	McPherson	2400 E Kansas Ave	\$ 0.6434
60	KS	Norton	303 W Holme St	\$ 0.5887
258	KS	Ottawa	203 E. 27th Ave	\$ 0.6434
655	KS	Scott City	1720 S Main Street	\$ 0.3087
348	KY	Calvert City	2966 US Hwy 62	\$ 0.7733
321	KY	Corbin	222 Hwy 770	\$ 0.8033
418	KY	Grayson	750 N. Carol Malone Blvd.	\$ 0.9333
360	KY	Horse Cave	4000 L&N Turnpike	\$ 0.8333
291	KY	Richmond	3799 Colonel Rd.	\$ 0.7633
618	KY	Sadieville	313 Porter Road	\$ 0.8333
238	KY	Shepherdsville	1090 Cedar Grove Rd.	\$ 0.8733
383	KY	Sparta	976 Hwy 1039	\$ 0.7233
303	KY	Waddy	1940 Waddy Road	\$ 0.7733
523	LA	Duson	I-10 Exit 92	\$ 0.6232
209	LA	Greenwood	9600 Hwy 80 W.	\$ 0.5932
243	LA	Lake Charles	1118 Lowe - Grout Rd.	\$ 0.6332
289	LA	Minden	13510 Industrial Drive	\$ 0.6332
240	LA	Port Allen	751 Lobdell Hwy S.	\$ 0.6332
663	LA	Port Barre	17635 Highway 190	\$ 0.5291
237	LA	Tallulah	227 Hwy 65 S.	\$ 0.6332
362	LA	Vinton	2024A West St.	\$ 0.6332
537	MD	Cumberland	13300 Ali Ghan Road NE	\$ 0.9033
336	MI	Marshall	18720 Partello Rd.	\$ 0.5277
337	MN	Albert Lea	2751 E. Main St.	\$ 0.6473
621	MO	Bevier	1402 State Hwy O	\$ 0.5603
488	MO	Bloomsdale	8349 Enterprise Dr.	\$ 0.6603

Store	State	City	Address	Total Margin At Station
347	MO	Boonville	2501 W. Ashley Rd.	\$ 0.5603
612	MO	Bridgeton	13945 Missouri Bottom Road	\$ 0.7603
500	MO	Eagleville	21022 State Highway N	\$ 0.5603
616	MO	Harrisonville	2611 Brookhart Road	\$ 0.5603
282	MO	Joplin	4013 Hwy 43	\$ 0.5603
313	MO	Matthews	100 Love's Industrial Dr.	\$ 0.6203
585	MO	Neosho	12009 East Hwy 86	\$ 0.5603
341	MO	Rolla	3500 Hy Point Ind. Park Dr.	\$ 0.6603
235	MO	Saint Joseph	4601 S. Leonard Rd.	\$ 0.5603
461	MO	Saint Louis	6124 North Broadway	\$ 0.6603
643	MO	Sikeston	1401 South Main St	\$ 0.6203
458	MO	Strafford	400 N. State Highway 125	\$ 0.6203
388	MS	Batesville	725 Hwy 35 N.	\$ 0.6454
402	MS	Biloxi	11332 Cedar Lake Rd.	\$ 0.6454
208	MS	Canton	1545 Peace St.	\$ 0.6454
564	MS	Columbus	Hwy 82 Exit 50/12	\$ 0.6454
420	MS	Flowood	730 Hwy 80 E.	\$ 0.6454
595	MS	Gulfport	9240 County Farm Rd	\$ 0.6454
559	MS	Indianola	1212 Hwy 82 East	\$ 0.6854
639	MS	Lake	6138 Lake Norris Road	\$ 0.6454
393	MS	McComb	1119 Airport Fernwood Rd.	\$ 0.6854
619	MS	Poplarville	720 Highway 26E	\$ 0.6454
343	MS	Toomsaba	113 Will Garrett Rd.	\$ 0.6454
398	MS	Tupelo	4601 McCullough Blvd.	\$ 0.6454
412	NC	Dunn	3948 Hodges Chapel Rd.	\$ 0.7508
308	NC	Marion	3308 Hwy 226 S.	\$ 0.6508
507	NC	Salisbury	1105 Peeler Rd. Suite 100	\$ 0.6908
353	ND	Fargo	I-29 / 32nd Avenue South	\$ 0.3733
474	ND	Williston	104 104th Street East	\$ 0.8083
309	NE	Aurora	1539 Madison Ave.	\$ 0.8178
390	NE	North Platte	3211 S. Newberry	\$ 0.3313
625	NE	Sidney	645 Chase Drive	\$ 0.7178
631	NE	Valley	26120 E Meigs St	\$ 0.6778
404	NJ	Bordentown	2008 Hwy 206 S.	\$ 0.6583
210	NM	Albuquerque	2200 6th NW	\$ 0.6445

Store	State	City	Address	Total Margin At Station
614	NM	Albuquerque	12605 Central Ave NW	\$ 0.5445
22	NM	Clayton	703 South 1st	\$ 0.6445
329	NM	Clovis	4700 Mabry Dr.	\$ 0.7045
215	NM	Gallup	3380 W. 66th	\$ 0.8445
259	NM	Las Cruces	8993 Robert Larson Blvd.	\$ 0.6045
276	NM	Lordsburg	900 W. Motel Dr.	\$ 0.6445
257	NM	Milan	I-40, Horizon Blvd	\$ 0.7445
285	NM	Santa Rosa	1028 State Hwy 156	\$ 0.7045
262	NM	Tucumcari	1900 Mountain Rd.	\$ 0.6445
246	NV	Fernley	825 Commerce Center Dr.	\$ 0.7451
340	NV	Las Vegas	12501 Apex Great Basin Way	\$ 0.8547
365	NV	Wells	157 Hwy 93 S.	\$ 0.4947
403	NY	Binghamton	2 Industrial Park Dr.	\$ 0.8253
611	NY	Canaan	12845 Route 22	\$ 0.7143
594	OH	Bidwell	Hwy 35 Exit at Rodney Pike	\$ 0.7533
332	OH	Burbank	10145 Avon Lake Rd.	\$ 0.6533
389	OH	Conneaut	2 Love's Drive	\$ 0.5533
427	OH	Dayton	2217 S Edwin C Moses Blvd	\$ 0.6933
370	OH	Hubbard	2586 N. Main St.	\$ 0.7133
352	OH	Jeffersonville	13023 US 35	\$ 0.7533
356	OH	North Baltimore	13190 Deshler Rd.	\$ 0.6533
456	OH	Perrysburg	I-280, Exit 1B	\$ 0.6333
221	OH	Zanesville	605 Sonora Rd.	\$ 0.6533
266	OK	Ardmore	3201 NW 12th	\$ 0.5233
268	OK	Atoka	1811 S. Mississippi	\$ 0.5633
302	OK	Boise City	1100 East Main Street	\$ 0.6633
486	OK	Choctaw	7401 S. Choctaw Rd.	\$ 0.6633
295	OK	Chouteau	4564 W. 590	\$ 0.6333
248	OK	Clinton	10331 N. 2310 Rd.	\$ 0.6233
373	OK	Colbert	2150 Leavenworth Trail	\$ 0.6233
201	OK	Elk City	2703 East Highway 66	\$ 0.6633
630	OK	Enid	4104 E Randolph	\$ 0.6233
253	OK	Erick	901 N. Sheb Wooley Ave.	\$ 0.5633
204	OK	Eufaula	1601 Birkes Rd.	\$ 0.5233
604	OK	Guthrie	2700 E Highway 33	\$ 0.6633

Store	State	City	Address	Total Margin At Station
385	OK	Hinton	4400 N. Broadway	\$ 0.6233
46	OK	Hooker	201 E. Hwy 54	\$ 0.6633
263	OK	Lawton	24169 State Hwy 49	\$ 0.6233
74	OK	Lindsay	502 West Cherokee	\$ 0.6033
260	OK	Norman	5317 SE 44th St	\$ 0.5533
636	OK	Nowata	106 Airport Drive	\$ 0.6633
274	OK	Okemah	102 W. Copeland	\$ 0.6233
203	OK	Oklahoma City	800 S. Morgan Rd.	\$ 0.4633
205	OK	Oklahoma City	12225 N. I-35	\$ 0.5633
211	OK	Oklahoma City	845 SE 89th	\$ 0.4433
675	OK	Okmulgee	1300 N Wood Drive	\$ 0.4233
452	OK	Pauls Valley	1601 Airline Road	\$ 0.6633
219	OK	Seminole	11268 Hwy 99	\$ 0.6233
638	OK	Texhoma	1430 Hwy 54 E	\$ 0.6233
213	OK	Tonkawa	16501 W. Fountain Rd.	\$ 0.6633
654	OK	Union City	21000 SW 59th	\$ 0.5633
648	OK	Valliant	701 West Wilson Ave	\$ 0.4933
255	OK	Webbers Falls	I-40 Hwy 100	\$ 0.5233
658	OK	West Siloam Springs	3033 Hwy 412	\$ 0.7578
650	OR	Boardman	78665 Tower Road	\$ 0.7221
372	OR	Ontario	1041 NW Washington Ave.	\$ 0.5776
312	OR	Roseburg	280 Grant Smith Rd	\$ 0.4276
449	OR	Troutdale	400 NW Frontage Rd.	\$ 0.5376
407	PA	Carlisle	1165 Harrisburg Pike	\$ 0.3348
358	PA	Hamburg	3700 Mountain Road	\$ 0.6393
366	PA	Jonestown	22 Old Forge Rd.	\$ 0.5393
535	PA	Londonderry	Hwy 283, Exit Vine St.	\$ 0.6303
324	PA	Mifflinville	440 W. 3rd	\$ 0.3948
397	SC	Blacksburg	116 Priester Road	\$ 0.5658
371	SC	Dillon	1911 Hwy 34 W.	\$ 0.6258
387	SC	Fair Play	4238 Old Dobbins Bridge Road	\$ 0.7658
333	SC	Fort Mill	135 Sutton Ridge Ln.	\$ 0.5658
424	SC	Lexington	340 Longs Pond Rd.	\$ 0.8258
396	SC	Newberry	36 Dusty Rd.	\$ 0.6258
326	SC	Orangeburg	3205 Five Chop Rd.	\$ 0.8258

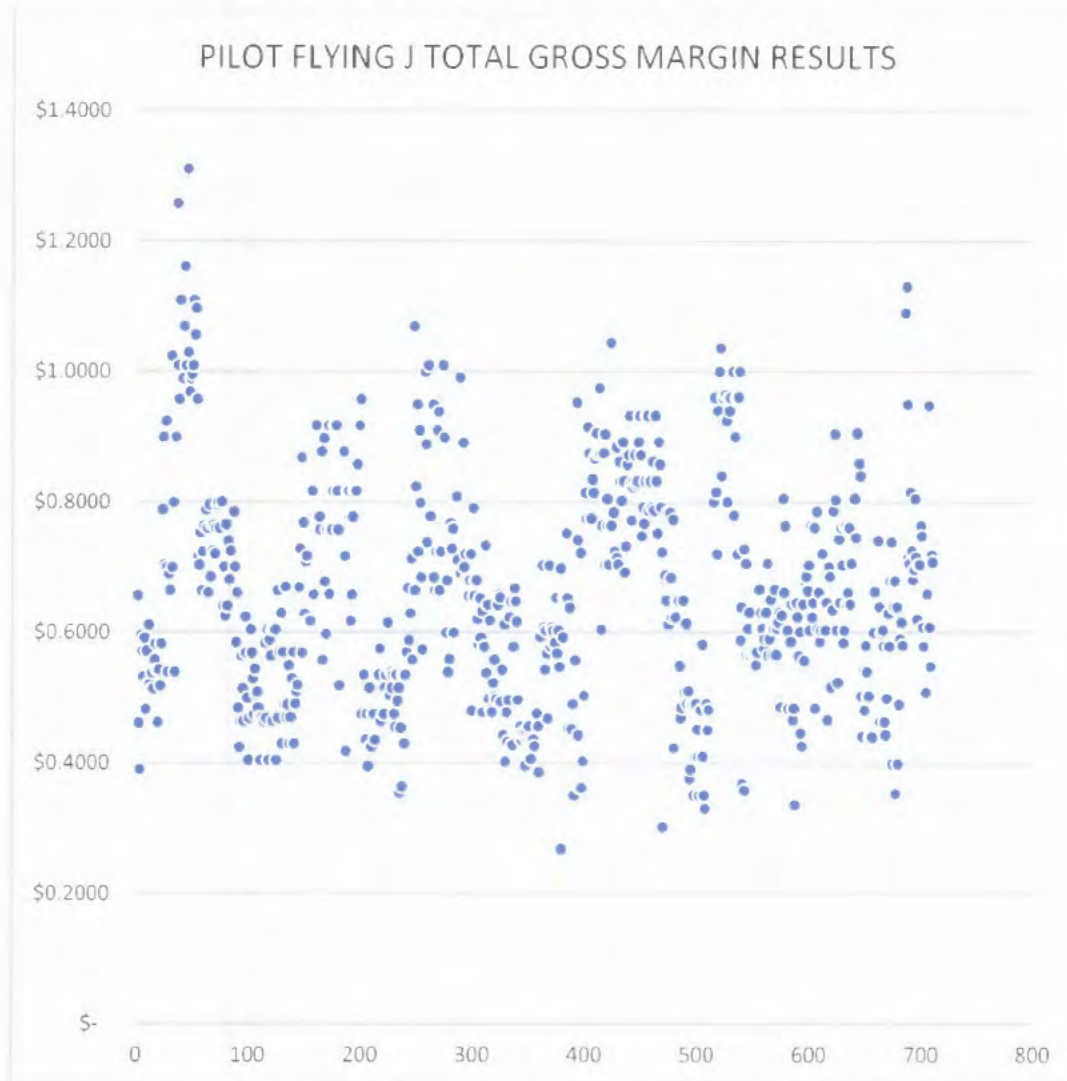
Store	State	City	Address	Total Margin At Station
602	SD	Box Elder	I-90 Exit 67B at Liberty Blvd	\$ 0.5293
445	SD	Sioux Falls	5301 N. Cliff Ave.	\$ 0.5633
330	TN	Baxter	110 East Lane	\$ 0.7193
364	TN	Charleston	200 Lower River Road NW	\$ 0.6793
314	TN	Christiana	6137 Epps Mill Rd.	\$ 0.6593
346	TN	Columbia	1624 Bear Creek Pike	\$ 0.6193
306	TN	Dandridge	1058 Deep Springs Rd.	\$ 0.6793
369	TN	Dickson	2971 Hwy 48 South	\$ 0.6793
641	TN	Dyersburg	3070 Lake Road	\$ 0.6793
244	TN	Jackson	2050 Hwy 70 E.	\$ 0.6793
480	TN	Lenoir City	9155 Hwy 321 N.	\$ 0.6793
344	TN	Memphis	3371 Lamar Ave.	\$ 0.6793
429	TN	Nashville	130 W. Trinity Lane	\$ 0.8103
490	TN	Nickajack Lake	260 TVA Road.	\$ 0.6193
629	TN	White House	1001 Highway 76	\$ 0.8638
200	TX	Amarillo	6930 I-40 E.	\$ 0.5777
250	TX	Amarillo	14701 I-40 W.	\$ 0.6687
261	TX	Amarillo	8615 Canyon Dr	\$ 0.5777
539	TX	Andrews	1201 S. Main St.	\$ 0.6777
299	TX	Anna	1701 S. Hwy 75	\$ 0.6377
447	TX	Anthony	3000 Mountain Pass	\$ 0.6377
610	TX	Baird	1333 US Hwy 283 N	\$ 0.7377
401	TX	Baytown	1703 I-10	\$ 0.6777
229	TX	Claude	9701 I-40	\$ 0.6377
293	TX	Cleveland	107 FM 2025	\$ 0.6777
464	TX	Comfort	I-10 Exit 523	\$ 0.7777
294	TX	Dallas	8800 S. Polk Street	\$ 0.5977
481	TX	Deer Park	Hwy 225, Exit Independence	\$ 0.5377
217	TX	Denton	8900 I-35	\$ 0.6687
673	TX	Domino	22406 N Hwy 59	\$ 0.4293
626	TX	Dumas	720 N Dumas Ave	\$ 0.6777
284	TX	Edinburg	8420 N. Expressway 281	\$ 0.6777
297	TX	Edna	1509 E. Rose St.	\$ 0.6777
214	TX	El Paso	1300 Horizon Blvd.	\$ 0.6377
298	TX	Encinal	I-35, Exit 39	\$ 0.6777

Store	State	City	Address	Total Margin At Station
288	TX	Fairfield	299 IH 45	\$ 0.6777
542	TX	Fort Stockton	2723 East US Highway 290	\$ 0.6777
281	TX	Fort Worth	200 Garden Acres Dr.	\$ 0.5277
375	TX	Hearne	Hwy 6 / FM 485	\$ 0.7377
231	TX	Hillsboro	1501 Corsicana Hwy	\$ 0.5777
315	TX	Houston	3940 N. McCarty	\$ 0.5777
419	TX	Houston	210 Patton St.	\$ 0.7377
617	TX	Hungerford	350 E Walnut Street	\$ 0.5777
331	TX	Hutchins	2500 S. I-45	\$ 0.6177
628	TX	Italy	1021 Dale Evans	\$ 0.6777
234	TX	Katy	612 Pederson Rd.	\$ 0.5777
327	TX	Kingsville	1451 North Hwy 77	\$ 0.7777
473	TX	Leary	451 Leary Road	\$ 0.6777
589	TX	Lubbock	4221 North Interstate 27	\$ 0.5777
290	TX	Lufkin	1003 S. Medford Dr.	\$ 0.6377
264	TX	Luling	190 US Highway 90	\$ 0.6777
247	TX	Memphis	219 S. Boykin Drive	\$ 0.6377
623	TX	Midland	5200 Cholla Rd	\$ 0.6377
216	TX	Midlothian	1501 W. Highway 287	\$ 0.6377
279	TX	Mount Vernon	215 E. I-30 N. Service Rd.	\$ 0.6777
471	TX	Natalia	21548 FM 471 S	\$ 0.5777
339	TX	Odessa	1901 W. I-20	\$ 0.6377
492	TX	Pecos	5202 South Cedar St.	\$ 0.6377
662	TX	Quanah	1415 W 11th Street	\$ 0.5777
270	TX	Ranger	1600 Loop 254 W.	\$ 0.6777
380	TX	Rhome	Hwy 287 and Hwy 114	\$ 0.5777
283	TX	Rockwall	1990 E. I-30	\$ 0.6077
242	TX	San Antonio	11361 S. I-35	\$ 0.5777
463	TX	Sequin	I-10,Exit 604	\$ 0.6377
475	TX	Sweetwater	9418 North Interstate 20	\$ 0.6777
342	TX	Three Rivers	2645 S. Hwy 37	\$ 0.6377
287	TX	Van	1221 S. Oak St	\$ 0.5777
651	TX	Van	1188 S. Oak St.	\$ 0.5777
256	TX	Van Horn	810 E Broadway	\$ 0.8377
233	TX	Waller	30710 FM 2920	\$ 0.6177

Store	State	City	Address	Total Margin At Station
273	TX	Weatherford	2605 E. Bankhead Dr.	\$ 0.5977
484	TX	Weimar	900 S Eagle Street	\$ 0.5777
269	TX	Wichita Falls	1124 Central Freeway E.	\$ 0.5777
468	TX	Willis	I-45, Exit 95	\$ 0.5777
335	UT	Cedar City	2645 N. Canyon Ranch Dr.	\$ 0.8930
581	UT	Salina	1915 South State Street	\$ 0.6930
436	UT	Salt Lake City	25 N. Redwood Rd.	\$ 0.7730
518	UT	Springville	358 South 2200 West	\$ 0.5730
560	VA	Franklin	2307 South Street	\$ 0.5794
399	VA	Lambsburg	227 Old Pipers Gap Rd.	\$ 0.7094
239	VA	Max Meadows	145 Major Grahams Rd.	\$ 0.7094
613	VA	Meadowview	13365 Glenbrook Ave	\$ 0.6094
435	VA	Ruther Glen	23845 Rogers Clark Blvd.	\$ 0.6094
317	VA	Skippers	770 Moores Ferry Rd.	\$ 0.6094
469	VA	South Hill	1850 North Mecklenburg Ave	\$ 0.5894
305	VA	Tom's Brook	1015 Mt. Olive Rd.	\$ 0.5694
413	WA	Ellensburg	1512 Hwy 97	\$ 0.9393
454	WA	Napavine	1276 Rush Rd	\$ 0.7393
514	WA	Ritzville	I-90, Exit 221	\$ 0.9093
448	WA	Tacoma	1501 33rd Ave. East	\$ 0.8393
637	WI	Dekorra - Poynette	W9493 County Rd CS	\$ 0.4413
587	WI	Fond du Lac	191 West Rolling Meadows Drive	\$ 0.5743
622	WI	Menomonie	5930 Badger Dr.	\$ 0.5643
432	WI	Oak Creek	9650 S. 20th St.	\$ 0.5043
345	WI	Oakdale	220 Oakwood St.	\$ 0.5643
378	WV	Ripley	3875 Charleston Rd.	\$ 0.5653
220	WY	Cheyenne	3305 W. College Dr.	\$ 0.4933
310	WY	Wamsutter	314 Kelly Rd.	\$ 0.7933

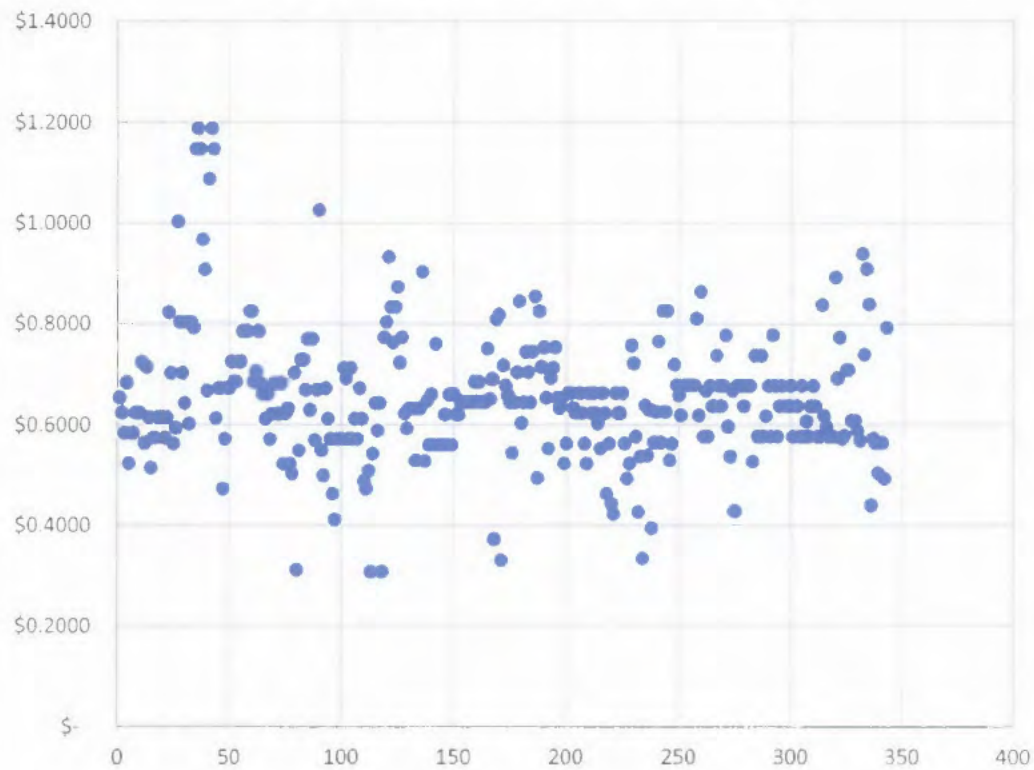
Appendix Two – EMI Charts

Pilot/Flying J 21 Dec 2016



Loves 5 Dec 2016

LOVES TOTAL GROSS MARGIN RESULTS



Appendix Three - Step-By-Step Guide to Understanding the EMI

This explanatory guide provides a detailed explanation of the columns/data found in the EMI. The guide utilizes Pilot/Flying J as a reference case and splits discussion between gasoline, ethanol, and biodiesel. The cumulative results explained above are derived from calculations internal to the EMI.

I. Gasoline Ethanol

A. Core Terms

At the outset, the EMI model for gasoline ethanol relies on several foundational inputs that critically influence the values derived in other portions of the EMI.

- **E100 FOB** --- This value refers to neat ethanol; values are further subdivided to account for transportation costs, and transportation costs less the value of a RIN.
- **RIN** --- This value refers to the daily price of a RIN on the date for which the EMI model was run.
- **National Average RBOB** --- This value refers to Reformulated Gasoline Blendstock for Oxygen Blending ("RBOB"), or unblended "gasoline" or "petrol."
- **Terminal Cost** --- This value refers to the price of blending ethanol or biodiesel to the owner of the hydrocarbons.

B. Specific Terms and Calculations

- **Basic Background Information** --- Core identifying information for a given store are available in the first several columns.
- **Retail E10** --- This value refers to the price of E10 at a given retail station. I expect the price to be substantially similar at other fuel retailers in close proximity, whether small or large. This value is taken directly from data furnished by Pilot/Flying J and Loves. This price includes all operating costs and reasonable margins, since it is likely similar to the prices of small fuel retailers nearby.
- **Tax** --- This value refers to all applicable state and federal taxes at a given locale.
- **Wholesale E10** --- This value refers to the price of E10 at a given retail station, less all applicable state and federal taxes.

- **RBOB Portion** --- This value refers to 90% of the price of E10 at a given locale, less all applicable state and federal taxes. 90% is utilized to account for the 10% blending rate of ethanol. Accordingly, this value accounts for the portion of aggregate Wholesale E10 belonging to, or associated with, RBOB. This number corresponds to National Average RBOB, not Retail E10.
- **Ethanol Portion** --- This value refers to 10% of the price of E10 at a given locale, less all applicable state and federal taxes. 10% is utilized because all conventional gasoline in the United States contains 10% ethanol. Accordingly, this value accounts for the portion of aggregate Wholesale E10 belonging to, or associated with, ethanol, not RBOB. Furthermore, this number corresponds to E100 FOB less the RIN.
- **E10 Price** --- This value refers to the addition of the RBOB Portion and Ethanol Portion respectively.
- **RIN Incentive** --- This value refers to 10% of the daily RIN price. 10% is utilized because all conventional gasoline in the United States contains 10% ethanol. Accordingly, this value accounts for the portion of aggregate Wholesale E10 belonging to, or associated with, ethanol, not RBOB.
- **E10 Minus RIN Plus Terminal** --- This value refers to the E10 Price, less the cost of the RIN, plus terminal costs. This represents E10 after consideration of the RIN price, incentives, taxes, and the cost of blending.
- **Ethanol Margin** --- This value refers to the cost of Wholesale E10 less E10 Minus RIN Plus Terminal. This represents the gross margin on E10 at the particular station on the given day that large retailers derive as a benefit from the RIN market.

II. Biodiesel Ethanol

A. Core Terms

At the outset, the EMI model for gasoline ethanol relies on several foundational inputs that influence the values derived in other portions of the EMI.

- **B100 with RIN** --- This value refers to neat biodiesel; values are further subdivided to account for transportation costs, transportation costs less the value of a RIN, the biodiesel tax credit ("BTC"), and California's Low Carbon Fuel Standard ("LCFS").
- **RIN** --- This value refers to the daily price of RINs on the date for which the EMI model was run.
- **Excise** --- Excise Tax Refund known as the Blenders Tax Credit for Biomass Based Diesels.

- **CI** --- Carbon Intensity Value for Low Carbon Fuel Standard Programs.
- **National Average Diesel** --- This value refers to the national average price for diesel.

B. Specific Terms and Calculations

- **Diesel** --- This value refers to the price of diesel at a given retail station. I expect the price to be substantially similar at other fuel retailers in close proximity, whether small or large. This value is taken directly from data furnished by Pilot/Flying J and Loves. This price includes all operating costs and reasonable margins, since it is likely similar to the prices of small fuel retailers nearby.
- **Tax** --- This value refers to all applicable state and federal taxes at a given locale.
- **Wholesale Diesel** --- This value refers to the price of diesel at a given locale, less all applicable state and federal taxes.
- **Blend Concentration** --- Unlike gasoline ethanol which has a static blend concentration, rates vary for biodiesel. The EMI for biodiesel accounts for the local blend concentration rate accordingly.
- **Diesel Portion** --- This value refers to the local blend concentration rate weighted against the national average diesel cost. Accordingly, this value accounts for the portion of aggregate Wholesale Diesel belonging to, or associated with, diesel. This number corresponds to National Average Diesel, not Retail Diesel.
- **Biodiesel Portion** --- This value refers to the local blend concentration rate weighted against the national average diesel cost. Accordingly, this value accounts for the portion of aggregate Wholesale Diesel belonging to, or associated with, biodiesel.
- **Diesel Blend Cost** --- This value refers to the addition of the Diesel Portion and the Biodiesel Portion respectively.
- **RIN BTC LCFS Incentive** --- This value accounts for various state and federal incentives. First, it accounts for a select percent (weighted by the blend concentration) of the daily RIN price. Second, it account for the Biodiesel Tax Credit ("BTC"). Finally, it accounts for California's Low Carbon Fuel Standard ("LCFS") incentive.
- **State Incentive** --- This value accounts for state-specific incentives external to those outlined above.
- **Biodiesel Margin** --- This value refers to the addition of "RIN BTC LCFS Incentive" and the "State Incentive." This represents the gross margin on biodiesel at the particular

station on the given day that large retailers then derive as a benefit from the RIN market.

- **Total Margin At Station** --- This value refers to the addition of the Ethanol Margin and the Biodiesel Margin.

This document relies on various third-party data, and, as a result, may contain errors that confound data results. Every effort was taken to ensure this report's accuracy.

RENEWABLE IDENTIFICATION NUMBERS (RINS) TRADING UNDER THE RENEWABLE FUELS PROGRAM: UNINTENDED CONSEQUENCES FOR SMALL RETAILERS

Prepared by Bernard L. Weinstein, Ph.D.

for the Small Retailer Coalition

Maguire Energy Institute

Cox School of Business

Southern Methodist University

Dallas, Texas

August 2016



INTRODUCTION AND BACKGROUND

More than a decade ago, in an effort to decrease imports, reduce greenhouse gas emissions, and enhance America's energy security, Congress passed the Energy Policy Act of 2005. Among other provisions, this legislation created a national Renewable Fuel Standard (RFS) mandating the blending of renewable fuels—such as ethanol—into gasoline and diesel. Each year, the Environmental Protection Agency (EPA) sets a blending target known as the renewable volume obligation (RVO). For example, in 2010, the EPA directed that 12.9 billion gallons of ethanol and other biofuels be blended into gasoline and diesel. By 2016, the amount had jumped to 18.1 billion gallons and the proposed RVO requirement for 2017 is 18.8 billion gallons. Since the law was passed, ethanol's share of the U.S. gasoline mix has increased from less than three percent to nearly 10 percent.

In addition, Congress directed the EPA to generate a system of tracking numbers that could be used to ensure that mandated blending requirements were being met by the “obligated parties.” Curiously, the “points of obligation” are refineries and gasoline-diesel importers, not the actual parties doing the blending.

These 38-character tracking numbers, sometimes called “credits,” are known as RINs (renewable identification numbers). A RIN is assigned to each physical gallon of renewable fuel produced or imported and follows that gallon as it is transferred to a fuel blender. After blending, RINs are separated from the blended gallons of gasoline and diesel, and they are used by obligated parties as proof they have met their mandated volumes. Importantly, obligated parties may sell RINs to one another or to “non-obligated” parties (see discussion below). For example,

if Refiner A has fulfilled its annual RFS requirement but continues to buy and blend renewable fuels, it can sell excess RINs to Refinery B or to an oil importer who has not purchased sufficient renewable fuels to meet its RFS requirement.

GAMING THE SYSTEM: SOME UNINTENDED CONSEQUENCES OF THE RENEWABLE FUELS

STANDARD AND RINS TRADING

RINs trading has become a huge business. For example, in 2014 the EPA reported more than 50 billion RIN sales transactions, with 30 billion transacted by non-obligated parties. In theory, allowing refineries and importers to buy or sell RINS makes economic sense. What's more, market trading can help facilitate the realization of EPA's annual RVO requirements. But because the entities actually blending renewable fuels into gasoline and diesel are not the "obligated parties," many retailers find themselves at a competitive disadvantage.

How the fuel market actually works

The retail fuel market in the U.S. is comprised of three types of companies: (1) convenience stores, who sell more than 80 percent of all fuels; (2) high volume hypermarkets like Walmart, Kroger and Costco, who sell about 14 percent of all motor fuel; and (3) traditional service stations and marinas who account for about 6 percent of retail fuel sales.

About half of America's 152,000 fueling stations sell "branded" gasoline and diesel refined or imported by the 15 major oil companies. A branded retailer must purchase fuel from a branded supplier or distributor and can't shop around for lower-priced fuel that might increase

its margins or be passed on to consumers through lower prices. The other half of the nation's fueling stations are independents selling "unbranded" gasoline and diesel. Independents have the advantage of being able to seek lower priced fuel, often on the spot market, which in turn affords consumers lower prices. Large retailers sell both branded and unbranded fuel while most small retailers sell branded fuels only.

Finished gasoline and diesel containing varying amounts of renewable fuel are purchased by retail stations from petroleum marketers or wholesalers who do the actual blending. For branded retail stations the blending specifications are controlled by the brand owner –e.g. Shell, Exxon, etc. Unbranded retail stations typically don't have any specific blend specifications. However, as discussed above, the point of obligation for RINs is the refiner or the importer of petroleum, even though the blending occurs downstream. Indeed, some large retailers do their own blending.

Gaming the system

And here's where the market distortions come into play. Since the RVOs apply to refiners and importers, and not to other entities that control blending, "non-obligated parties" can game the system. For example, companies like Circle K and Sheetz have been increasing their market share by taking ownership of fuels at the blending point and acquiring RINs they can sell at a profit, thereby generating additional revenues that allow them to undercut their competitors' retail prices. In practice, only these large retailers have the financial resources to participate in RINs trading; small retailers have neither the capital nor the market leverage to take positions in RINs trading.

Fuel blending entails costs in the millions of dollars, in particular the financial ability to purchase bulk quantities of gasoline and diesel blendstocks as well as ethanol and other biofuels. In addition, costs are entailed for terminal and pipeline services to move cargo to the blending location. Only large retailers can cover these expenses; but the profits from RIN trading can more than offset these costs.

For example, in its 2014 10-K report, Murphy USA cites RIN sales as having a significant impact on its operating income, offsetting negative margins in its product supply and wholesale business segments. "...In the year ended December 31, 2014...sales of RINs reached \$92.9 million compared to \$91.4 million in the prior year." Indeed, 85 percent of Murphy's profit in 2014 came from RINs. In its 2015 10-K filing, Murphy states "...Incremental revenue is generated by capturing and selling RINs via our capability to source bulk fuel and subsequently blend ethanol and bio-diesel at the terminal level." And in a 2015 interview, Murphy USA CEO Andrew Clyde stated "We expect the contribution from product supply and wholesale to be below our annual guidance....but more than made up for by higher than expected RIN sale volume and prices."

An examination of Marathon Petroleum reveals a similar strategy. Marathon owns Speedway convenience stores and retail fuel stations and is the nation's largest company-owned and operated convenience store chain based on revenue. For 2014, Marathon reported that "Other income increased \$59 million compared to 2013 and that the increase was due primarily to higher gains on sales of excess RINs of \$74 million."

The bias against small retailers has serious implications for their long-term survival because the current regulatory regime governing RINs trading allows large fuel marketers and large retailers to gain revenues and a competitive advantage over small retailers. Reports indicate that large retailers are using the RIN profit stream for retail expansion and acquiring a larger share of a limited market. Small retailers are losing both sales volume and stores to large retailers. In other words, small retailers aren't just less profitable but they are going out of business due to their growing inability to compete with large retailers. As a result, the demise of small "mom-and-pop" fueling stations has accelerated, with more than 12,000 closing since 2007. [API Retail Outlet 2014 Summary and www.cspdailynews.com/industry-news-analysis/corporate-news/articles/us-c-store-count-down.]

Some industry analysts predict the bias against independent refiners and small retailers is likely to worsen next year. Andy Lipow, president of Lipow Oil Associates, believes the price of RIN credits could escalate rapidly in 2017 if the demand for gasoline continues growing at its current pace and the RVO blending requirement jumps to nearly 19 billion gallons of renewable fuel. With the prospect of higher profits associated with RINs trading, Goldman Sachs recently upgraded the stocks of some large retailers.

WHY COMPETITION MATTERS IN THE RETAIL FUEL MARKET

The trading of RINs purely for financial gain is a perversion of the original intent of the RFS program that was supposed to promote pass-through of the RIN value to retailers and consumers while encouraging higher renewable fuel blends. In practice, the RFS has promoted

only modest increases in blend ratios while inducing a major shift in the retail market, with large retailers gaining market share at the expense of medium-sized and small businesses.

American households and businesses have long benefited from the lowest gasoline and diesel prices in the world, outside of some OPEC countries. Relatively cheap and abundant motor fuel is not only a boon to American families, affording more disposable income for other necessities, but it has also helped maintain our global industrial advantages by holding down transportation costs. Historically, strong competition in the retail fuel market has been an important factor holding down prices for consumers and businesses. But that competitive market is now at risk.

Between 1994 and 2015, the number of fueling stations in the U.S. dropped from 202,800 to about 150,000. Population shifts, gentrification and land constraints have all played a role in this decline; but the rate of decline has increased since the implementation of the RFS program a decade ago.

Industry-wide statistics highlight the vulnerability of small fuel retailers. For large retailers, average net profit margins increased to nearly 3 percent in 2014 compared with 1.6 percent in 2012. At the same time, net profit margins among small private gas stations were relatively flat. Furthermore, an analysis conducted in 2013 by Study Groups/Finance & Resource Management Consultants found that “high volume retailers suck a lot of volume out of the market, making the economics more challenging for traditional convenience store operators and the dealers they serve.”

The same study cited a case in Northern New Jersey where two independent retailers dropped their prices by more than 10 cents a gallon when they saw cars lining up 10- and 15-deep at a nearby Costco location. One of the operators reasoned he would be out of business if he didn't lower his price to compete with Costco. At the same time, of course, his profit margin dropped dramatically. On a global scale, if profit margins for small, independent retailers continue to narrow in order to "meet the competition," even more of these businesses can be expected to fail in coming years. Fewer small retailers, in turn, will mean higher fuel prices for consumers along with a reduction in the services these businesses provide, such as auto repair and maintenance.

HOW TO BALANCE THE PLAYING FIELD BY CHANGING THE POINT OF OBLIGATION

In theory, with higher RIN prices anticipated as mandated RVOs grow year after year, large retailers should increase the blending infrastructure for renewable fuels and promote higher blends by passing on the RIN value to consumers. But because large retailers aren't obligated parties, they have no incentive to do this. Put differently, the higher RIN values won't motivate them to blend higher levels of renewable fuels because the RINs can be sold to generate supplemental revenue. However, while incremental supplemental revenue available at a given location presents a windfall that effectively subsidizes large retailers, the absence of additional infrastructure for blending and distributing higher-order renewable fuel blends is an indicator that the revenues from renewable fuel blending are either not significant enough or not

predictable enough to motivate large retailers to invest the millions of dollars that would be required at any given blending or distribution location to install capital improvements.

On the other hand, if the RFS obligation were placed at the blending point, and large retailers became obligated parties, these retailers would be more likely to promote the goals of the RFS and increase their marketing and distribution of higher renewable fuel blends. Importantly, such a change would eliminate some of the competitive disadvantage that small retailers currently face due to the RIN revenue generation capabilities of large retailers. Without this change, the current RFS system will continue to harm competition in the transportation fuel market and drive additional small retailers out of business.



**RENEWABLE IDENTIFICATION NUMBERS (RINS)
TRADING UNDER THE RENEWABLE FUELS
PROGRAM: CONTINUED UNINTENDED
CONSEQUENCES FOR SMALL FUEL RETAILERS
UPDATED REPORT**

Prepared by Bernard L. Weinstein, Ph.D.
for the Small Retailer Coalition

Maguire Energy Institute
Cox School of Business
Southern Methodist University
Dallas, Texas

February 2017

I. INTRODUCTION

Since my last report on the unintended consequences of the Renewable Fuel Standard (“RFS”) program for small fuel retailers, the Environmental Protection Agency (“EPA”) has proposed to deny requests to initiate a rulemaking to change the point of obligation under the RFS program.¹ As someone who studies and follows this issue closely, I believe the EPA’s Proposed Denial relied on and uncritically adopted views and statements proffered by large retailer coalitions—such as the National Association of Convenience Stores (“NACS”) and the Society of Independent Gasoline Marketers of America (“SIGMA”)—instead of independently assessing relevant information. The Petitioners provided myriad studies, data, and other useful resources to aid EPA’s evaluation. EPA’s cursory adoption of the large retailers’ views will encourage even more retail fuel market consolidation that will directly harm small fuel retailers across the United States. Rather than relying on spoon-fed claims and unfounded assertions of large retailer coalitions, EPA should conduct its evaluation of the merits of the Petitions independently in order to ensure a fair, unbiased, and accurate review.

To assist with this review and to advance public understanding about the negative effects on small retailers nationwide, this updated report assesses the latest evidence and further reinforces my previous conclusion that if the point of obligation is not changed, the current RFS system will continue to stifle competition in the transportation fuel market and drive additional small retailers out of business at the expense of efficient fuels

markets and local economies. Sections II, III(A), III(B)(1), and V below reiterate the findings of my August 2016 report, while providing updated information where appropriate. Sections III(B)(2), IV and VI offer new information based on case studies and additional data not contained in the August 2016 report.

II. BACKGROUND

More than a decade ago, in an effort to decrease imports, reduce greenhouse gas emissions, and enhance America's energy security, Congress passed the Energy Policy Act of 2005. Among other provisions, this legislation created a RFS mandating the blending of renewable fuels—such as ethanol—into gasoline and diesel. Each year, EPA sets a blending target known as the renewable volume obligation (“RVO”). For example, in 2010, EPA directed that 12.9 billion gallons of ethanol and other biofuels be blended into gasoline and diesel. By 2016, the amount had jumped to 18.1 billion gallons and the proposed RVO requirement for 2017 is 18.8 billion gallons. Since the law was passed, ethanol's share of the U.S. gasoline mix has increased from less than three percent to nearly 10 percent.

In addition, Congress directed the EPA to generate a system of tracking numbers that could be used to ensure that mandated blending requirements were being met by the “obligated parties.” Curiously, the “points of obligation” are refineries and gasoline-diesel importers, not the actual parties doing the blending.

¹ See U.S. Env'tl. Prot. Agency, PROPOSED DENIAL OF PETITIONS FOR RULEMAKING TO CHANGE THE RFS POINT OF OBLIGATION, at *9 (Nov. 10, 2016) [hereinafter PROPOSED DENIAL].

These 38-character tracking numbers, sometimes called “credits,” are known as RINs (renewable identification numbers). A RIN is assigned to each physical gallon of renewable fuel produced or imported and follows that gallon as it is transferred to a fuel blender. After blending, RINs are separated from the blended gallons of gasoline and diesel, and they are used by obligated parties as proof they have met their mandated volumes. Importantly, obligated parties may sell RINs to one another or to “non-obligated” parties. For example, if Refiner A has fulfilled its annual RFS requirement but continues to buy and blend renewable fuels, it can sell excess RINs to Refinery B or to an oil importer who has not purchased sufficient renewable fuels to meet its RFS requirement.

III. GAMING THE SYSTEM: SOME UNINTENDED CONSEQUENCES OF THE RENEWABLE FUELS STANDARD AND RINS TRADING

RINs trading has become a huge business. For example, in 2014 the EPA reported more than 50 billion RIN sales transactions, with 30 billion transacted by non-obligated parties.² In theory, allowing refineries and importers to buy or sell RINs makes economic sense. What’s more, market trading can help facilitate the realization of EPA’s annual RVO requirements. But because the entities actually blending renewable fuels into gasoline and diesel are not the “obligated parties,” many retailers find themselves at a competitive disadvantage.

² EPA data regarding RINs transactions is only available for years 2011, 2012, 2013, and 2014. Each year saw an increase in RIN sales transactions. See U.S. Env’tl. Prot. Agency, Annual RIN Sales/Holdings Summary (last updated Feb. 16, 2017), <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/annual-rin-salesholdings-summary>.

A. How the fuel market actually works

The retail fuel market in the U.S. is comprised of three types of companies: (1) convenience stores, who sell more than 80 percent of all fuels; (2) high volume hypermarkets like Walmart, Kroger, and Costco, who sell about 14 percent of all motor fuel; and (3) traditional service stations and marinas who account for about 6 percent of retail fuel sales.

About half of America's 123,807 fueling stations sell "branded" gasoline and diesel refined or imported by the 15 major oil companies. A branded retailer must purchase fuel from a branded supplier or distributor and can't shop around for lower-priced fuel that might increase its margins or be passed on to consumers through lower prices. What's more, in many cases a branded retailer may be required to abide by a minimum price while large unbranded retailers, even if they're buying fuel from the same distributor, don't have to abide by such price restrictions.

The other half of the nation's fueling stations are independents selling "unbranded" gasoline and diesel. Independents have the advantage of being able to seek lower priced fuel, often on the spot market, which in turn affords consumers lower prices. Large retailers sell both branded and unbranded fuel while most small retailers sell branded fuels only.

Finished gasoline and diesel containing varying amounts of renewable fuel are purchased by retail stations from petroleum marketers or wholesalers who do the actual blending. For branded retail stations, the blending specifications are controlled by the

brand owner, e.g. Shell, Exxon, etc. Unbranded retail stations typically don't have any specific blend specifications. However, as discussed above, the RFS obligated party is the refiner or the importer of petroleum, even though the blending occurs at the terminal/rack. Indeed, some large retailers do their own blending.

B. Gaming the system

Here is, where the market distortions come into play. Since the RVOs apply to refiners and importers, and not to other entities that control blending, "non-obligated parties" can game the system. For example, companies like Casey's, Couche-Tarde, Murphy's, Circle K, Sheetz, and other large retailers have been increasing their market share by taking ownership of fuels at the blending point and acquiring RINs they can sell at a profit, thereby generating additional revenues that allow them to undercut their competitors' retail prices. In practice, only these large retailers have the financial resources to participate in RINs trading: small retailers have neither the capital nor the market leverage to take positions in RINs trading.

Fuel blending entails costs in the millions of dollars, in particular the financial ability to purchase bulk quantities of gasoline and diesel blendstocks as well as ethanol and other biofuels. In addition, costs are entailed for terminal and pipeline services to move cargo to the blending location. Only large retailers can cover these expenses; but the profits from RIN trading can more than offset these costs.

The bias against small retailers has serious implications for their long-term survival because the current regulatory regime governing RINs trading allows large fuel

marketers and large retailers to gain revenues and a competitive advantage over small retailers. Reports indicate that large retailers are using the RIN profit stream for retail expansion and acquiring a larger share of a limited market. The acquisition of convenience store chains by cash-rich limited partnerships suggests the chains' market share will continue to grow. The effect of these convenience store chain acquisitions has been detrimental for small retailers. In fact, these retailers are losing both sales volume and stores to large retailers. In other words, small retailers aren't just less profitable than before; rather, they are going out of business due to their growing inability to compete with large retailers and a related loss of sales. As a result, the demise of small "mom-and-pop" fueling stations has accelerated, with more than 12,000 closing since 2007.

Furthermore, according to the 2017 NACS/Nielsen Convenience Industry Store Count, the number of convenience stores selling motor fuels (123,807) declined in 2016 by 0.6 percent (or 567 stores) with the single-store motor fuel segment dropping by 604 stores to roughly 70,000 stores. From 70,000 stores today, the number could dwindle to a mere 12,000 single-store operators within a decade, according to Joe Petrowski, former CEO of the Cumberland Gulf Group that owns and operates convenience stores and gas stations throughout New England, New York, the Mid-Atlantic states, and Florida. Based on Petrowski's extensive experience and my review of the available evidence, I suspect that his conclusion is indeed accurate.

With President Donald Trump freezing pending regulations for the next several months, which has stalled the implementation of a higher RVO for 2017, the price of

RINs has dropped markedly so far this year. Indeed, within a month's time from January 1st to February 1st, 2017, the price of a renewable fuel RIN (D6) dropped by roughly 50 percent from \$0.87 to \$0.44.³ Still, the bias against independent refiners and small retailers remains. The reduction in RIN prices that has resulted from the freeze supports the notion that speculators in the RIN market have caused some of the harm that contributes to fuel margin differences. Changing the point of obligation will provide permanent relief to keep spectators out of the RIN market and stabilize RIN prices while making fuel margins more equitable.

IV. RECENT EVIDENCE SUPPORTS THE NEED TO CHANGE THE POINT OF OBLIGATION

EPA's claims that a change in the point of obligation would not address challenges associated with problematic marketplace dynamics do not square with a recent study published by a renewable fuels expert or new statements and statistics from large retailers. Together, this evidence is emblematic of overall trends in the fuel industry that favor large retailers at the expense of small retailers. Casey's, Couche-Tard (the owner of Circle K, CST Brands, and other retail chains), and Murphy's, three large fuel retailers, provide informative case studies.

A. New Analysis Concerning Large Retailers' Fuel Margins

A recently completed and published analysis by a biodiesel expert, Ramon Benavides, describes how Love's Truck Stops and Pilot/Flying J Trucks Stops use RINs to secure fuel margins that are nearly twice the national convenience store average.

³ E-mail from EcoEngineers, RIN Index – 2/1/2017 (Feb. 1, 2017) (on file with author).

Specifically, Benavides found that for Pilot/Flying J, the per-store average margin nationwide was \$0.66 per gallon, and for Loves the nationwide store average margin was \$0.65 per gallon. Based on these figures drawn from his mathematically and academically robust estimated margin indicator model, he finds that these fuel margins equate to twice the profit than conventional wisdom might assume.

The scenario described in Benavides's analysis demonstrates the dramatic price competition that has allowed aggressive market consolidation in the fuel retail market. Truck stops are a segment of the fuel retail market that is experiencing the same level of unfair competition that all fuel retailers are experiencing under the RFS. Large truck stop chains, like Pilot/Flying J and Love's, are increasing market share while independents are dwindling year after year.

B. Casey's

During the second quarter of fiscal year 2017, Casey's sold \$17.8 million RINs for a total of \$15.9 million.⁴ These sales represented a roughly \$0.03-per-gallon improvement to the company's fuel margin. At that time, the average RIN price was approximately \$1.12. By comparison, during the third quarter of 2016, the average RIN price was \$0.61. A representative of Casey's stated during a recent earnings call that the company is "fortunate, I would say, to be able to benefit from [the point of obligation]

⁴ SEC Exhibit 99.1 "Casey's Builds Momentum for Future Expansion." See: <https://www.sec.gov/Archives/edgar/data/726958/000072695816000301/q22017pressrelease.htm>

and due to our market, where we operate and the way we distribute our fuel.”⁵ In all, the company’s RIN sales generated \$4.7 million for the company in Q2 2017 alone.⁶

In the first quarter of fiscal year 2017, Casey’s experienced increased fuel margins compared to Q1 2016 due to a decline in the wholesale cost of fuel and a favorable environment for renewable energy credits resulting in a fuel margin of \$0.195 per gallon for the quarter. During that time, Casey’s sold roughly 17.9 million RINs at an average price of \$0.82, which represented a benefit of a roughly \$0.027 per gallon benefit to the fuel margin.⁷

In the third quarter of 2016, the company’s fuel margins finished above the company’s goal due to elevated RIN values as well as a decline in wholesale fuel costs toward the end of the quarter.⁸

C. Couche-Tard

Couche-Tard’s Chief Financial Officer, Claude Tessier, acknowledged in a Q1 2017 earnings call that Couche-Tard benefits from “generally broader access to RINs in the U.S. than most of our competition. So as RINs increase in value we think that widens

⁵ Casey’s (CASY) CEO Terry Handley on Q2 2017 Results - Earnings Call Transcript. See: <http://seekingalpha.com/article/4029330-caseys-casy-ceo-terry-handley-q2-2017-results-earnings-call-transcript>

⁶ Form 10-Q for CASEYS GENERAL STORES IN. See: <https://biz.yahoo.com/e/160906/casy10-q.html>

⁷ SEC Exhibit 99.1 “Casey’s Posts Record First Quarter Earnings.” See: <https://www.sec.gov/Archives/edgar/data/726958/000072695816000270/q12017pressrelease.htm>

⁸ “Casey’s Posts 28% Increase on Year-To-Date Net Income.” See: <http://www.businesswire.com/news/home/20160307006417/en/Casey%E2%80%99s-Posts-28-Increase-Year-To-Date-Net-Income>

our competitive advantage and then finally we focus on the Categories. [W]e think we were widening what we believe is a key competitive and sustainable advantage in the fuel space” (emphasis added).⁹ The company’s Chief Executive Officer, Brian Hannasch, echoed Tessier’s comments with respect to Couche-Tard’s advantages over the competition:

*I think in our situation with our scale, I think we’re in a position that we’re able to capture a greater proportion of the value of the RINs across our footprint than most of our competitors. So while it’s hard to quantify the exact impact, we think we’re advantaged vis-a-vis the industry when it comes to RINs, and that a higher RIN value is actually a positive for us vis-à-vis the industry, which is what I think is relevant (emphasis added).*¹⁰

D. Murphy’s

In its Form 10-Q filed on November 3, 2016, with the Securities and Exchange Commission (“SEC”), Murphy’s directly acknowledges that it has benefited from “its ability to attain RINs and sell them at favorable prices in the market (page 28).”¹¹ In addition, on its Q3 earnings call, Murphy’s explained the specifics of its RIN-related profits, stating that: “RIN sales of \$48 million offset product supply and wholesale contribution of negative \$29 million, as higher RIN prices embedded in the refinery spot

⁹ Alimentation Couche-Tard’s (ANCUF) CEO Brian Hannasch on Q1 2017 Results - Earnings Call Transcript. See: <http://seekingalpha.com/article/4003201-alimentation-couche-tards-ancuf-ceo-brian-hannasch-q1-2017-results-earnings-call-transcript>

¹⁰ Q4 2016 Alimentation Couche-Tard Inc Earnings Call. See: <http://finance.yahoo.com/news/edited-transcript-atd-b-earnings-231039709.html>

¹¹ 10-Q: MURPHY USA INC. TEM 2. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS. See: <http://www.marketwatch.com/story/10-q-murphy-usa-inc-2016-11-03>

prices reduced our spot to wholesale rack margins, which stayed negative for much of the quarter (page 4)."¹²

While one might reasonably intuit that these RIN profit figures provide Murphy's a competitive advantage vis-a-vis other market participants, that conclusion is confirmed through statements from a Murphy's executive at the Raymond James 37th Annual Investors Conference. The most relevant excerpts follow:

- "We have access to the RINs through the blending. We have the credit. We have the scale and scope to hold the working capital and manage through the volatility *that smaller competitors don't have* (page 5, emphasis added)."¹³
- "So what's the *differentiated capability* that sets us apart? It's our fuel supply chain. And the way we do that is 50% of the gallons we sell are sourced through proprietary barrels, meaning we buy them from the refiners in the refining centers, we ship them through the pipeline systems for which we have access through our historical shipper status. ... We blend it with ethanol. That captures the RIN. And that leaves us with a landed cost of supply when you add that supply advantage plus the RINs, *that's going to be advantaged over our competitors* (page 4, emphasis added)."¹⁴

If Murphy itself admits it has a "differentiated capability" that its "smaller competitors" don't have, how can EPA call into question the existence of a broader trend that is disadvantaging small fuel retailers nationwide?

¹² Q3 2016 Murphy USA Inc Earnings Call. See: <http://finance.yahoo.com/news/edited-transcript-musa-earnings-conference-205638433.html>

¹³ Transcript - Raymond James 37th Annual Investors Conference. Speaker: Andrew Clyde, President and Chief Executive Officer. See: <http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NjEzNDA0fENoaWxkSUQ9MzI3MDcwfFR5cGU9MQ=&t=1>

¹⁴ *Ibid.*

Read together, the evidence from the latest report, and the statements of Casey's, Couche-Tarde, and Murphy's demonstrate the existence of strong, industry-wide gains among large retailers through obtaining renewable fuel – and RINs – at the blending point. These substantial RIN-oriented gains go well beyond what is necessary for these large retailers to turn a profit, and, if the point of obligation was shifted, these monies could be set aside for RFS compliance – rather than further padding large retailers' already robust pockets.

V. WHY COMPETITION MATTERS IN THE RETAIL FUEL MARKET

The trading of RINs purely for financial gain is a perversion of the original intent of the RFS program that was supposed to promote pass-through of the RIN value to retailers and consumers while encouraging higher renewable fuel blends. In practice, the RFS has promoted only modest increases in blend ratios while inducing a major shift in the retail market, with large retailers gaining market share at the expense of medium-sized and small businesses.

American households and businesses have long benefited from the lowest gasoline and diesel prices in the world, outside of some Organization of the Petroleum Exporting Countries ("OPEC") countries. Relatively cheap and abundant motor fuel is not only a boon to American families, affording more disposable income for other necessities, but it has also helped maintain our global industrial advantages by restricting transportation costs. Historically, strong competition in the retail fuel market has been an

important factor providing price ceilings for consumers and businesses. But that competitive market is now at risk.

Industry-wide statistics highlight the vulnerability of small fuel retailers. For large retailers, average net profit margins increased to nearly 3 percent in 2014 compared with 1.6 percent in 2012. At the same time, net profit margins among small private gas stations were relatively flat. Furthermore, an analysis conducted in 2013 by Study Groups/Finance & Resource Management Consultants found that “high volume retailers suck a lot of volume out of the market, making the economics more challenging for traditional convenience store operators and the dealers they serve.” The same study cited a case in Northern New Jersey where two independent retailers reduced their prices by more than 10 cents a gallon when they saw cars lining up 10- and 15-deep at a nearby Costco location. One of the operators reasoned he would be out of business if he didn’t lower his price to compete with Costco. At the same time, of course, his profit margin dropped dramatically.

The owner of Plaza 95, a small operator in Martin County, Florida, complained last year that Racetrac and Speedway had launched a price war that was killing his business. “Plaza 95 is ten to 15 cents above the prices of bigger stations nearby. It’s continuously putting the small business man in a tougher position...I’m not putting that 15 cents in my pocket.” Furthermore, the weight of the available evidence suggests that this Plaza 95 owner is not alone in their assessment—that any profits yielded by large

retailers through the current RIN market is coming at the expense of small operators, who lack the financial capacity to compete with larger retailers in a “race to the bottom.”

On a global scale, if profit margins for small, independent retailers continue to narrow in order to “meet the competition,” even more of these businesses can be expected to fail in coming years. Fewer small retailers, in turn, will result in higher fuel prices for consumers along with a reduction in the services these businesses provide, such as auto repair and maintenance.

VI. CONCLUSION: HOW TO BALANCE THE PLAYING FIELD BY CHANGING THE POINT OF OBLIGATION

With higher RIN prices anticipated as mandated RVOs grow year after year, large retailers should increase the blending infrastructure for renewable fuels and promote higher blends by passing on the RIN value to consumers. But because large retailers are not obligated parties, they have no incentive to implement these initiatives. Put differently, higher RIN values won’t motivate large retailers to blend higher levels of renewable fuels because, in the current market, their RINs can be sold to generate substantial revenue.

On the other hand, if the RFS obligation were placed at the blending point, and large retailers become the obligated parties, to meet their newfound RFS obligations they would likely increase their marketing and distribution of higher renewable fuel blends. Importantly, such a change would eliminate some of the competitive disadvantage that small retailers currently face due to the RIN revenue generation capabilities of large retailers. Absent a shift in the point of obligation, small retailers will be increasingly

driven out of business, which will be harmful to market competition and local economies across the United States.

ORIGIN ID: KIPA (214) 651-5000
 PHONG TRAN
 HAYNES AND BOONE, LLP
 2323 VICTORY AVENUE
 SUITE 700
 DALLAS, TX 75219
 UNITED STATES US

SHIP DATE: 21FEB17
 ACTWGT: 2.00 LB
 CAD: 103850993/WSX12750

BILL SENDER

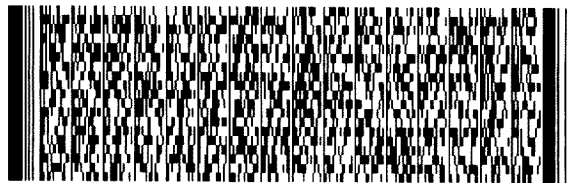
TO SCOTT PRUITT
 ADMINISTRATOR, EPA
 MAIL CODE 1101A
 1200 PENNSYLVANIA AVE, NW
 WASHINGTON DC 20460

(202) 272-0167

REF 0013929 00110-82683

INV
 PO

DEPT



FedEx
 Express



21711172140100

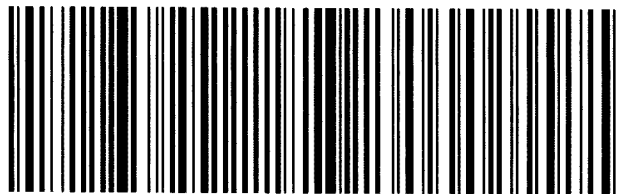
REL#
 3785346

WED - 22 FEB 10:30A
 PRIORITY OVERNIGHT

TRK# 7856 7356 4049
 0201

XC RDVA

20460
 DC-US IAD





Dedicated to a Strong Greater Minnesota



MESERB

Minnesota Environmental Science
and Economic Review Board

February 15, 2017

VIA EMAIL & FIRST CLASS U.S. MAIL

Mr. E. Scott Pruitt Administrator (Designate)
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Mr. Don Benton
Mr. David Schnare
Office of Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

**RE: Reconsideration of EPA Region 5's Approval of Minnesota's Numeric
Eutrophication Standards**

Dear Administrator Pruitt and Messrs. Benton and Schnare:

Our organizations, the Coalition of Greater Minnesota Cities (CGMC) and Minnesota Environmental Science and Economic Review Board (MESERB), represent 93 communities in Minnesota, many of whom are struggling to deal with the avalanche of new federal mandates imposed under the Obama Administration. This letter constitutes a formal request by our organizations for your office to review the actions taken by EPA Region 5 regarding one particularly egregious and inappropriate regulatory action – approval of Minnesota's numeric nutrient standards for streams. Presently, a lawsuit challenging that federal action is ongoing in the D.C. District Court, which was filed by the Center of Regulatory Reasonableness ("CRR") on behalf of our organizations and municipal members (Docket 16-1435-RJL). Accordingly, we also request that this case be held in abeyance while the matter is being reconsidered so further resources do not have to be expended in addressing Region 5's scientifically indefensible action. The following briefly discusses the basis for these requests in advance of an opportunity to meet with you and your staff to discuss our concerns in greater detail.

Background Regarding EPA Approval Action

Before any new water quality standard can be used for compliance purposes under the Clean Water Act, EPA must affirmatively find that the proposed standard is scientifically defensible and necessary to protect the designated aquatic life uses. *See generally* CWA § 303(c) and 40 C.F.R. Part 131. Consequently, standards are set at or near the threshold where significant adverse aquatic life use impacts may occur. Where ambient data indicate such numeric values will be exceeded, the waters are designated as "impaired" and significant regulatory actions (and

prohibitions) are triggered for those contributing the pollutant to the water body. Because of the serious ramifications associated with establishing water quality standards, comprehensive scientific documentation is needed to justify their adoption. As discussed below, we believe Region 5's approval falls squarely within the ambit of wasteful and irresponsible regulation that the new administration seeks to eliminate. EPA's action has resulted in and will continue to result in hundreds of Minnesota's streams, creeks, and rivers being improperly designated as nutrient impaired. In so doing, EPA's approval will recklessly misdirect limited fiscal resources towards "improvements" that are unnecessary and will not produce demonstrable environmental benefits. Given that nutrients are at the forefront of EPA's Clean Water Act regulatory agenda, the national precedent established by EPA's approval will be massive.

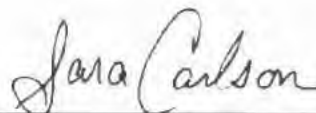
Our group's concerns were documented in detail in a December 10, 2015 letter. *See* Att. 1, CRR withdrawal request to EPA without Attachments. The letter focused on Minnesota's unprecedented use of (and Region 5's approval of) the 5-day biochemical oxygen demand (BOD5) test (a common wastewater test method used throughout the country) and a parameter known as diel DO flux (24-hour change in dissolved oxygen concentration) as nutrient and aquatic life impairment indicators. No prior federal guidance or criteria document ever asserted that either of these parameters could be defensibly used as nutrient impairment indicators, or that these parameters were even capable of directly causing aquatic life impairment. In response to Freedom of Information Act requests, EPA acknowledged that it possessed no records showing it was scientifically defensible to use these endpoints (that are affected by easily a dozen non-nutrient factors) as nutrient impairment indicators. *See* Atts. 2 – 3, FOIA requests and responses from EPA headquarters regarding BOD5 and DO flux. When *Standard Methods*, the national authority on proper test usage, was asked to weigh in on whether the BOD5 test was appropriate for use as a nutrient impairment response indicator, they confirmed emphatically that it was not. *See* Att. 4, Standard Methods Memorandum on BOD5 (November 19, 2014). Nonetheless, EPA approved these components of Minnesota's standards with conclusory assertions that the decision was scientifically defensible, in the face of conclusive evidence to the contrary.

In the midst of the ongoing litigation, another EPA document emerged, prepared by an EPA Region 3 scientist, regarding a similar stream nutrient impairment proposal by the Pennsylvania Department of Environmental Protection (PADEP). EPA's scientist admitted that the objections to using DO flux were well founded and that DO flux was not an aquatic life impairment indicator. *See* Att. 5, email from Dr. Gregory J. Pond, EPA Region 3, regarding PADEP's nutrient criteria (Dec. 30, 2015). These EPA comments prompted Pennsylvania to withdraw its proposed stream impairment protocol. Unsurprisingly, EPA is now seeking to preclude the D.C. District Court's consideration of this damaging evidence in conjunction with its review of the Minnesota standards.

Request for Immediate Action

It is crucial that our federal regulatory programs be based on sound decision making and good science – not administrative fiat. But for EPA's relentless insistence on regulating nutrients at all times and all places, regardless of what the data shows (*see* USEPA 2013 Nutrient Impairment Guidance to States), this abusive situation would not be occurring. Several hundred million dollars in taxpayer funded wastewater and stormwater compliance costs are easily triggered by this one misplaced standard. Future growth will be hampered for any communities wishing to discharge to waters designated as impaired due to these flawed standards. Given the well documented fact that use of BOD5 and DO Flux as nutrient/aquatic life impairment indicators is not scientifically defensible, we request that the new Administration agree to hold the current litigation in abeyance, so the parties may engage in alternative dispute resolution. As EPA is under a duty to independently ensure that proposed state water quality criteria are scientifically defensible, and these criteria plainly are not, the Agency's reconsideration of its earlier approval would be most appreciated.

Sincerely,



CGMC President, Sara Carlson



MESERB President, Andy Bradshaw

Cc. John Hall, Center for Regulatory Reasonableness

Enclosures

INDEX OF ATTACHMENTS

- Att. 1** – Dec. 10, 2015 CRR Withdrawal Request to EPA without Attachments
- Att. 2** – BOD5 FOIA Request and Response from EPA
- Att. 3** – DO Flux FOIA Request and Response from EPA
- Att. 4** – Standard Methods Memorandum on BOD5
- Att. 5** –Email from Dr. Gregory J. Pond, EPA Region 3, regarding PADEP's nutrient criteria

CENTER FOR REGULATORY REASONABLENESS

1620 I STREET, N.W.
SUITE 701
WASHINGTON, DC 20006
TELEPHONE: 202-600-7071
FAX: 202-463-4207

www.centerforregulatoryreasonableness.org

December 10, 2015

VIA EMAIL & U.S. MAIL

Gina McCarthy, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W. (2410T)
Washington, DC 20460

Susan Hedman
Region 5 Administrator
U.S. Environmental Protection Agency
77 West Jackson Boulevard - Mail code (R-19)
Chicago, IL 60604-3507

**RE: Request for EPA to Withdraw and Modify its Approval of Minnesota's Stream
Nutrient Water Quality Standards**

Dear Ms. McCarthy and Ms. Hedman:

This letter details the Center for Regulatory Reasonableness' ("CRR") objections to EPA's January 23, 2015 approval of the Minnesota Pollution Control Agency's ("MPCA") August 20, 2014 submission of new and revised water quality standards ("WQS") and criteria. See Ex. 1, EPA's Approval Letter. Specifically, CRR takes issue with EPA's approval of two of the response variables (*i.e.*, diel DO flux and BOD5) associated with MPCA's new eutrophication criteria for rivers and streams. As discussed in more detail below, EPA's approval failed to meet the applicable review standard because the Agency possessed no information demonstrating that the BOD5 test and diel DO flux were valid impairment response criteria for nutrients. Rather, in both cases, EPA possessed clear and extensive documentation (*Standard Methods* publications, regulatory notices, hearing transcripts and EPA correspondence) confirming that these parameters were *not* scientifically defensible indicators for nutrient impairments. EPA's unprecedented approval of these metrics as nutrient impairment indicators will misdirect state and local resources unless it is corrected.

Attachment 1

**CENTER FOR REGULATORY
REASONABLENESS**

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 2

Accordingly, CRR requests EPA to promptly withdraw its January 23, 2015 approval of Minnesota's revised water quality standards for those two response variables. If EPA does not withdraw its approval, CRR (on behalf of its numerous Minnesota municipal members who will be negatively impacted by the revised standards and municipal entities in other states considering numeric criteria adoption) will be forced to challenge EPA's approval in federal District Court.

Standard Governing EPA's Review and Approval of State WQS

It well settled in administrative law, that a federal agency's action is arbitrary and/or capricious where the agency has:

relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view of the product of agency expertise.

Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983). Beyond these general requirements applicable to all agency actions, when it comes to water quality standards approval, EPA must confirm that state water quality standards (including numeric and narrative criterion) are "consistent" with the Clean Water Act ("CWA"), are "based on [EPA's] 304(a) guidance ... or other scientifically defensible methods,"¹ and are developed using "sound scientific rationale." See 33 U.S.C. § 1313(c)(3) ("If the Administrator determines that any such revised or new standard is not consistent with the applicable requirements of this chapter, he shall ... notify the State and specify the changes to meet such requirements."); 40 C.F.R. § 131.11(a) ("States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use."); 40 C.F.R. § 131.11(b)(1) ("In establishing criteria, States should: (1) Establish numerical values based on: (i) 304(a) Guidance; or (ii) 304(a) Guidance modified to reflect site-specific conditions; or (iii) Other scientifically defensible methods."); 80 Fed. Reg. 51020, 51028 (Aug. 21, 2015) ("Ultimately, states and authorized tribes must adopt criteria that are scientifically defensible and protective of the designated use to

¹ 80 Fed. Reg. 51020, 51021 (Aug. 21, 2015) ("[W]ater quality criteria define the minimum conditions necessary to achieve those environmental objectives.").

CENTER FOR REGULATORY
REASONABLENESS

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 3

ensure that WQS continue to 'protect the public health or welfare, enhance the quality of water and serve the purpose of ' the Act.').²

EPA regulations further delineate the components of the Agency's review of state water quality standards. Relevant to this request, 40 C.F.R. § 131.5(a)(4) (2008) requires EPA to confirm "whether the State standards which do not include the uses specified in section 101(a)(2) of the Act are based upon appropriate technical and scientific data and analyses...." This rule was revised in 2015 to clarify that, as part of its review and approval of state WQS, EPA must confirm that adopted state criteria are "based on sound scientific rationale consistent with § 131.11." 40 C.F.R. § 131.5(a)(2) (2015); 80 Fed. Reg. 51020 (Aug. 21, 2015).³

In a case challenging EPA's review and approval of nutrient standards and specific biological response variables/thresholds, the Agency itself espoused an even more specific checklist for approving Florida's nutrient standards. Specifically, the Agency stated that:

if one-sided thresholds are implemented for assessment purposes, the translator must (1) [h]ave a basis in science that relates the measurements specified by the procedure to the desired condition or adverse condition to be avoided, as described by the narrative; (2) [e]ffectively separate waters into groups where (a) protection of the use is clearly threatened or impaired and (b) where protection of the use is uncertain . . . ; [and](3) [u]tilize the proper parameters and constituents to achieve the objectives set forth above.

Fla. Clean Water Network, Inc. v. EPA, 2012 U.S. Dist. LEXIS 44539, *32 (N.D. Fla. 2012) (emphasis added).

² *Fla. Clean Water Network, Inc. v. EPA*, 2012 U.S. Dist. LEXIS 44539, *30 (N.D. Fla. 2012) ("In order to approve a new or revised water quality standard, the EPA must find that it is consistent with federal regulations and the CWA; in making such a determination, the EPA must consider whether the new or revised standard adequately protects the designated uses of the state's waterbodies and is based on a sound scientific rationale."); *Mississippi Com. On Natural Resources v. Costle*, 625 F.2d 1269, 1276 (5th Cir. 1980) ("It was not unreasonable for the EPA Administrator to... require states to justify standards not in conformance with the [EPA 33 U.S.C. § 1314(a)(1)] criteria policy.").

³ See 40 C.F.R. § 131.21 ("The Regional Administrator's approval or disapproval of a State water quality standard shall be based on the requirements of the Act as described in §§ 131.5 and 131.6, and, with respect to Great Lakes States or Tribes (as defined in 40 CFR 132.2), 40 CFR part 132.").

CENTER FOR REGULATORY
REASONABLENESS

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 4

In short, EPA's approval of a state WQS submission is more than a "rubber-stamp."⁴ Before approving, EPA must conduct a thorough and probing review of a state submission to ensure that "sound scientific rationale" was employed and well-documented in the WQS submission record. In the case of nutrients, the chosen nutrient impairment response variables (1) must have a demonstrated adverse effect on aquatic life, and (2) be set at a level such that attainment is necessary to prevent nutrient impairment. As discussed below, EPA's approval of MPCA's BOD5 test and diel DO flux as indicators of eutrophication entirely fail to meet the governing review standard.

Specific Objections to Use of diel DO flux and BOD5

Under MPCA's revised eutrophication criteria, a Minnesota stream or river is impaired for nutrients if (1) the total phosphorus (TP) value is exceeded, and any of the four response variables (*i.e.*, sestonic chlorophyll *a*, diel DO flux, BOD5 and pH) are also exceeded. Conversely, if the TP value is met, or all four of the response variables are in compliance with MPCA's threshold values, then the waterbody is not considered nutrient impaired. The concerns regarding the efficacy of the BOD test and DO Flux as valid nutrient impairment indicators were extensively addressed in comments submitted by the municipal entities that are members of CRR and directly impacted by the rulemaking (*e.g.*, MESERB).

⁴ The Agency's decision, regardless of traditional notions of deference, must still adhere to the fundamental tenets of administrative law and its own regulations that govern the process. *See Michigan v. EPA*, 135 S. Ct. 2699, 2706 (U.S. 2015) (despite the deference afforded under *Chevron* and *Seminole Rock*, "[f]ederal administrative agencies are required to engage in reasoned decisionmaking. Not only must an agency's decreed result be within the scope of its lawful authority, but the process by which it reaches that result must be logical and rational.") (internal citations and quotations omitted); *see also Pennaco Energy Inc. v. EPA*, 692 F. Supp. 2d 1297, 1312 (D. Wyo. 2009) ("EPA's statutory duty is not to review whether [the state] found that the standards are in accordance with the Clean Water Act... Rather, the EPA must act objectively and independently and make its own determination. In so doing, it must explain its reasoning."); *id.*, at 1314 (in reviewing WQS "[t]he EPA must make plain its course of inquiry, its analysis and its reasoning. ... [T]he agency must nevertheless explain the evidence which is available, and must offer a rational connection between the facts found and the choice made.") (internal citations and quotations omitted).

CENTER FOR REGULATORY
REASONABLENESS

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 5

BOD5 Test issues

The use of the BOD5 test as an indicator of nutrient impairment was documented by MESERB as completely unprecedented and unsupportable. Nutrients (nitrogen and phosphorus) do not exert a BOD. As noted by Dr. Chapra, one of the foremost authorities on nutrient impairment evaluation, the 5-day BOD demand measures the effects of numerous non-nutrient parameters (organic substances, nitrogenous material) and is artificially inflated by effects from live algae placed in the dark for five days. Therefore, utilizing this test with ambient samples containing live algae would very likely produce a BOD reading that does not actually exist and is simply an artifact of the test method. *See Ex. 2, Chapra Analysis of BOD5.* (“It is my assessment that the creation of a BOD5 criteria as a nutrient impairment indicator is fundamentally flawed and not consistent with accepted scientific practices for assessing nutrient impacts in streams or any other natural waters.”). Beyond this, BOD is not a “toxic” measurement and does not directly impair aquatic life. It is impossible to determine what ecological impact could be associated with a BOD reading without further site-specific analyses. *See Ex. 7, Excerpts of January 8, 2014 MPCA hearing testimony, at 142-143.*

Consistent with these observations (and Dr. Chapra’s expert opinion), no published EPA nutrient criteria document states that the BOD5 test is a valid indicator of nutrient impairment. In fact, prior to EPA’s approval action, counsel for MESERB submitted a FOIA request to EPA regarding the use of this test as a valid nutrient impairment indicator. *See Ex. 3, BOD5 FOIA Request/Response.* In its response to the FOIA request, EPA conceded that it possesses no documentation supporting the use of the 5-day BOD demand (BOD5) test as a proper nutrient response criterion. *Id.* Finally, Standard Methods (the expert EPA relies upon for proper test development and usage – *see* 40 C.F.R. § 136.3) states that BOD5 should *not* be used as a parameter to evaluate the presence of a nutrient impairment. *See Ex. 4, Standard Methods Memo on BOD5 test* (“The BOD test (Standard Method 5210 B) is not considered to provide an appropriate measure of nutrient pollution nor is it a valid predictor of nutrient impacts.”).⁵ This “oxygen demand” test is simply being misapplied as it plainly was not designed to, and is incapable of reliably predicting nutrient impairment in the environment, as MPCA itself admitted under oath. Given this clear record, it is apparent that EPA’s approval of the BOD5 test was inconsistent with the Clean Water Act and the implementing rules that require a sound scientific rationale to be presented. *See Humana of Aurora v. Heckler*, 753 F.2d 1579, 1583 (10th Cir.

⁵ Eaton, A. November 19, 2014. *Memorandum: RE: BOD as an Indicator of Nutrient Pollution.* Standard Methods for the Examination of Water and Wastewater Joint Editorial Board. Available at https://www.standardmethods.org/PDF/BOD_Nutrient_Pollution_Memo_2014.pdf

CENTER FOR REGULATORY
REASONABLENESS

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 6

1985) (“When an agency [decision is] based on a study [that is] not designed for the purpose and which is limited and criticized by its authors on points essential to the use sought to be made of it, the administrative action is arbitrary and capricious and a clear error in judgment.”).

Diel DO Flux issues

Similar to the BOD5 test concerns, MESERB noted that the diel DO flux is not an appropriate response variable for prevention or identification of nutrient impairment. Use of DO flux as a nutrient response variable to identify aquatic life impairment, as opposed to minimum DO, has not been accepted by the scientific community and has not been endorsed in any EPA guidance documents dealing with the development of nutrient criteria. As with the BOD test, this response criteria is affected by other, non-nutrient factors (*e.g.*, temperature, natural plant growth, stream depth existence of wetlands, and velocity) and one cannot assess the ecological significance of the measured DO flux without conducting further detailed assessments. The use of this metric as an indicator of nutrient-induced use impairment was also unprecedented.

A separate different EPA FOIA response affirmed that the Agency has no documentation supporting use of DO flux as an aquatic life impairment parameter. *See* Ex. 5, DO flux FOIA Request/Response with follow-up correspondence (confirming that “EPA currently has no official records dealing with DO variation as a water quality impairment in and of itself (that is, when DO levels never drop below the daily minimum OR the 7-day mean minimum)”). This response is consistent with EPA’s Gold Book (and 304(a) criterion), which indicated that DO minimum is the factor of concern and nowhere indicates DO flux as an independent aquatic life impairment metric. *See Quality Criteria for Water 1986* (“Gold Book”), EPA Publication 440586001, May 1987, at 209-216 (“Each criterion may thus be viewed as an estimate of the threshold concentration below which detrimental effects are expected.”).⁶ EPA’s approval of a response variable that radically deviates from the applicable 304(a) criterion – without justification – is per se arbitrary and capricious. *See* 80 Fed. Reg. 51020, 51028 (Aug. 21, 2015) (“While states and authorized tribes are not required to adopt the CWA section 304(a) criteria recommendations, they are required under the Act and EPA’s implementing regulations to adopt

⁶ The *Gold Book* doesn’t have page numbers. Accordingly, the cited page numbers are PDF version page numbers.

CENTER FOR REGULATORY
REASONABLENESS

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 7

criteria that protect applicable designated uses and that are based on sound scientific rationale.”).⁷

In addition to the general flaw of using diel DO flux as an indicator for nutrient-induced use impairment, MPCA’s submission provided no information to confirm that the selected DO range is beyond that expected to be naturally occurring. Plant growth occurs in virtually all streams and is necessary to support a healthy fishery and diverse assemblage of insect life. As EPA is well aware from its nutrient TMDL assessments, extensively published literature, and MPCA documentation as part of this rulemaking, plant growth (periphyton) may reach high levels ($>200 \text{ mg/m}^2$ chlorophyll a) even in nutrient poor waters. Both EPA and MPCA recognize that up to 150 mg/m^2 chl-a represents a “safe level” of plant growth in streams. Minn. R. 7050.0222, Subp. 2b(C) (2015); *see also* Nutrient Criteria Technical Guidance Manual Rivers and Streams, EPA-822-B-00-002, July 2000, at 100. The degree of DO flux caused by the “safe” level of periphyton growth, conversely, is a function of the physical conditions of a stream (e.g., depth, slope, etc.). Data presented by MPCA confirmed that even streams with a safe level of plant growth will violate this DO flux “impairment” criteria. *See also* Ex. 6, Gallagher Analysis, at 2 (“The DO flux variations identified by MPCA are, in my professional opinion, commonly found in surface waters and are not indicative of nutrient impairment. This was confirmed by MPCA monitoring that showed even with very low phytoplankton levels reported for streams, DO flux variations in the range of 2-6 mg/l occurred.”).

MPCA’s own data presentation and the testimony of an independent expert (nowhere refuted in the record) clearly demonstrate that the DO flux range approved by EPA is not necessary to protect stream uses. In fact, it would regulate natural and otherwise “safe” conditions, which is beyond federal authority. *See* 80 Fed. Reg. 51020, 51025 (Aug. 21, 2015) (“The CWA does not require states and authorized tribes to adopt designated uses to protect a level beyond what is naturally occurring in the water body.”). Consequently, EPA’s approval of diel DO flux must be withdrawn.

Different BOD5 and diel DO flux values in similarly classified waters

⁷ *See also* 80 Fed. Reg. 51020, 51028 (Aug. 21, 2015) (At a minimum, states must “provide an explanation for why they did not adopt new or revised parameters for which EPA has published new or updated CWA section 304(a) criteria.”).

CENTER FOR REGULATORY REASONABLENESS

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 8

Beyond the fundamental deficiencies noted above, the values promulgated by MPCA and approved by EPA are, on their face, arbitrary and lacking in sound scientific rationale. Specifically, as was noted by one of the peer reviewers, EPA approved different BOD5 and diel DO flux numeric variables as necessary to protect *the same type of fishery classification*. For instance, depending on its location within the state of Minnesota, the impairment threshold BOD5 level can be anywhere from 1.5 mg/L to 3.0 mg/L for warm water fisheries and the diel DO flux range can be as large as 4.5 mg/L to as small as 3.0 mg/L. It is not apparent how warm water (Class 2) fishery sensitivity could vary based on the location within the state. Moreover, no physiological basis was provided to justify different "protective criteria" for response variables in waters similarly classified. For example, no data show that warm water fisheries in the North ecoregion are more sensitive to DO flux than those found in South ecoregion. Absent some rational explanation of, mechanistically, how this could occur and credible scientific studies supporting the conclusion (which do not exist in the record), it is arbitrary and capricious to impose more restrictive aquatic life protection needs based on geographic location.

MPCA admits it did not account for the effect of confounding factors

Unlike most other pollutants, it is well recognized that nutrients do not have any direct toxic effect on human or ecological health. Rather, the threat posed by nutrients is tied to excessive plant growth and the adverse side effects such plant growth can have on the aquatic community. The nutrient-plant growth relationship in streams, however, involves numerous intricate and interconnected factors (*e.g.*, scour, light availability, sedimentation) that dramatically alter the relationship between nutrients and plant growth. Certain metrics (such as invertebrate or fishery assemblage) are impacted by numerous non-nutrient factors (*e.g.*, habitat, toxics, sedimentation). In this instance, MPCA used an aquatic life fishery metric (*e.g.*, number of darters present) to determine impairment thresholds for BOD, algal growth and DO flux in a "stressor-response" regression analysis. To ensure such analyses are scientifically defensible, EPA's stressor response document requires those developing nutrient criteria to evaluate and adjust for the presence of confounding factors. *See Using Stressor-Response Relationships to Derive Numeric Nutrient Criteria*. EPA-820-S-10-001, November 2010, at 11, 65-67 ("Environmental factors that can potentially confound the relationship of interest should be identified early in the analysis when conceptual models are developed (see Section 2). At this evaluation stage in the criteria development process, analysts should systematically consider and document the possible effects of these potential confounders.").

As its eutrophication standards were adopted using *in situ* ecological data and were ostensibly based on a presumed cause and effect relationship, MPCA should have conducted a

**CENTER FOR REGULATORY
REASONABLENESS**

Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 9

confounding factors analysis. EPA's approval letter was premised on the fact that a confounding factors analysis, consistent with the 2010 Stressor-Response guidance, had been conducted by MPCA. Ultimately, however, MPCA admitted that no such analysis was done and that the correlations presented could have been affected by other factors. *See* Ex. 7, Excerpts of January 8, 2014 MPCA hearing testimony (MPCA: "[T]here is no analysis in the SONAR documents that specifically demonstrates that the biological conditions alone are due to phosphorus."); (Q: "Is there anywhere in the SONAR or in the backup documentation that I would find the Confounding Factors Analysis, the likes of which that are described in the 2010 Stress Response Guidance Document?" MPCA: "Probably not anything specific..."). Therefore, even assuming *arguendo* that BOD5 and diel DO flux were proper nutrient response variables, MPCA's submission should have been rejected by EPA because it failed to conduct a sufficient confounding factors analysis on response criteria/biological metrics that are impacted by a well-documented number of other physical and chemical factors. *See Ohio Valley Envtl. Coal., Inc. v. Fola Coal Co., LLC*, 82 F. Supp. 3d 673, 687 (S.D. W. Va. 2015) (proper to rely on EPA criteria reference document because it contained an adequate confounding factors analysis). EPA's failure to ensure that the MPCA completed the necessary confounding factors analysis renders its approval of the BOD and DO flux response criteria arbitrary and capricious.

Impacts of Revised Standards

EPA's approval of the revised standards will result in MPCA classifying Minnesota waterbodies as nutrient impaired even though there is, in fact, no impairment related to nutrients.⁸ The regulatory effect of declaring a waterbody nutrient impaired – improperly or not – is significant. First, a Total Maximum Daily Load ("TMDL") must usually be prepared for all waterbodies that are nutrient impaired as a means to determine and allocate the total amount of nutrients a waterbody can retain without violating the water quality standard. *See* 33 U.S.C. § 1313(d); 40 C.F.R. § 130.2(h)-(i); 40 C.F.R. § 130.7(c). Second, dischargers to impaired waterbodies – whether a TMDL has been issued or not – customarily receive more stringent water quality-based effluent limitations under 40 C.F.R. § 122.44(d). As a means to comply with nutrient TMDLs and/or the more stringent permit limitations, permittees on waterbodies designated as nutrient impaired will have to expend resources to reduce nutrient discharges, creating additional solid waste for disposal, consuming electricity and chemical usage. Such technology comes at cost to the municipal permittees, which can only be funded through municipal bonds and tax hikes to the constituents. Given the potential massive fiscal impacts of

⁸ Conversely, it is also possible that the numeric criteria selected for DO flux and BOD5 will not be exceeded in situations where there is a real nutrient impairment.

**CENTER FOR REGULATORY
REASONABLENESS**

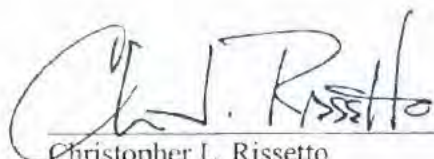
Gina McCarthy, Administrator
Susan Hedman, Region 5 Administrator
U.S. Environmental Protection Agency
December 10, 2015
Page | 10

classifying a waterbody as nutrient impaired and the adverse ecological effects of increasing chemical and energy usage, criteria and response variables that are not based on a sound scientific rationale and will result in misclassifications of nutrient impairments simply cannot be approved.

Conclusion

While CRR continues to fully support cost-effective, environmentally beneficial undertakings (including nutrient limits, where necessary), we are justifiably concerned that EPA's unprecedented approval of diel DO flux and BOD5 as nutrient response variables will result in the misdirection of municipal resources. Therefore, to ensure the limited fiscal resources of CRR members are only put towards meaningful environmental improvements, we request EPA withdraw its January 23, 2015 approval of Minnesota's nutrient standards.

Sincerely,

A handwritten signature in black ink, appearing to read "Ch. L. Risetto", is written over a horizontal line.

Christopher L. Risetto
General Counsel

Exhibits (1-7)

HALL & ASSOCIATES

Suite 701
1620 I Street, NW
Washington, DC 20006-4033
Telephone: (202) 463-1166 Web: <http://www.hall-associates.com> Fax: (202) 463-4207

Reply to E-mail:
aenglish@hall-associates.com

November 6, 2014

Via FOIA Online

National Freedom of Information Officer
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW (2822T)
Washington, DC 20460
Facsimile: (202) 566-2147

Re: Freedom of Information Act Request for Records Identifying Use of the Five-Day Biochemical Oxygen Demand Test as a Nutrient Response Criteria

To Whom This May Concern:

This is a request for a public records pursuant to the Freedom of Information Act ("FOIA"), 5 U.S.C. Section 552, as implemented by the Environmental Protection Agency ("EPA") at 40 C.F.R. Part 2. For purposes of this request, the definition of "records" includes, but is not limited to (1) federal guidance documents addressing the development of scientifically defensible numeric nutrient criteria under CWA Section 304(a), (2) federal register notices regarding acceptable methods for development of Section 304(a) water quality criteria, and (3) letters and memoranda regarding the approval of such numeric nutrient criteria under Section 303(c) of the Act.

Background

Recently, some state agencies which are contemplating the development of numeric nutrient criteria have indicated that the five-day biochemical oxygen demand ("BOD5") test is a valid indicator of nutrient pollution (*i.e.*, that it is an appropriate nutrient response criteria). The statements in *Standard Methods for the Examination of Water and Wastewater* – 22nd ed. regarding the use and application of the BOD5 test contains no indication that the test is intended to address the effects of nutrients on the aquatic environment. Nonetheless, some states have begun to proceed as if the BOD5 may be used as a valid response criterion for nutrient pollution, even in the absence of other indicators (*e.g.*, even when excessive plant growth is not apparent).

Request

This request seeks all records from EPA Headquarters providing announcing to the public or providing guidance to state agencies under Section 304(a) indicating that the BOD5 test may be used as a valid response criterion when establishing numeric nutrient criteria and any correspondence approving such criteria under Section 303(c) of the Act.

Please contact the undersigned if the associated search and duplication costs are anticipated to exceed \$250.00. Please duplicate the records that are responsive to this request and send it to the undersigned at the above address. If the requested record is withheld based upon any asserted privilege, please identify the basis for the non-disclosure.

If you have any questions regarding this request, please do not hesitate to contact this office so as to ensure that only the necessary document is duplicated.

Respectfully,



Alexander J. E. English
Hall & Associates
1620 I St., NW
Washington, DC 20006-4033
(202) 463-1166
aenglish@hall-associates.com



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DEC 5 2014

OFFICE OF WATER

Alexander J.E. English
Hall & Associates
Suite 701
1620 I Street, NW
Washington DC 20006-4033

RE: Freedom of Information Act Request EPA-HQ-2015-001305

Dear Mr. English:

This letter is in response to your Freedom of Information Act (FOIA) request of November 6, 2014.

Your FOIA requests copies of the following EPA headquarters records identifying the use of the five-day biochemical oxygen demand as an appropriate nutrient response criterion:

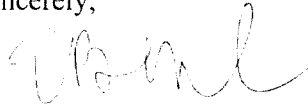
- 1) Federal guidance documents addressing the development of scientifically defensible numeric nutrient criteria under CWA Section 304(a),
- 2) Federal register notices regarding acceptable methods for development of Section 304(a) water quality criteria, and
- 3) Letters and memoranda regarding the approval of such numeric nutrient criteria under Section 303(c) of the Act.

EPA does not have any documents responsive to your request.

You may appeal this final response to the National Freedom of Information Officer, U.S. EPA, FOIA and Privacy Branch, 1200 Pennsylvania Avenue, N.W. (2822T), Washington, DC 20460 (U.S. Postal Service Only), FAX: (202) 566-2147, E-mail: hq.foia@epa.gov. Only items mailed through the United States Postal Service may be delivered to 1200 Pennsylvania Avenue, NW. If you are submitting your appeal via hand delivery, courier service or overnight delivery, you must address your correspondence to 1301 Constitution Avenue, N.W., Room 6416J, Washington, DC 20001. Your appeal must be made in writing, and it must be submitted no later than 30 calendar days from the date of this letter. The Agency will not consider appeals received after the 30 calendar day limit. The appeal letter should include the RIN listed above. For quickest possible handling, the appeal letter and its envelope should be marked "Freedom of Information Act Appeal."

This concludes the EPA response to FOIA Request EPA-HQ-2015-001305.

Sincerely,

A handwritten signature in cursive script, appearing to read "Behl", written in dark ink.

Elizabeth Behl, Director
Health and Ecological Criteria Division

HALL & ASSOCIATES

Suite 701
1620 I Street, NW
Washington, DC 20006-4033
Telephone: (202) 463-1166 Web: <http://www.hall-associates.com> Fax: (202) 463-4207

Reply to E-mail:
aenglish@hall-associates.com

July 31, 2014

Via FOIA Online

National Freedom of Information Officer
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW (2822T)
Washington, DC 20460
Facsimile: (202) 566-2147

Re: Freedom of Information Act Request for Records Concerning the Categorization of Diurnal Variation in Dissolved Oxygen as an Impairment of Water Quality

To Whom This May Concern:

This is a request for a public records pursuant to the Freedom of Information Act ("FOIA"), 5 U.S.C. Section 552, as implemented by the Environmental Protection Agency ("EPA") at 40 C.F.R. Part 2. For purposes of this request, the definition of "records" includes, but is not limited to, documents, letters, memoranda, notes, reports, e-mail messages, policy statements, data, technical evaluations or analysis, and studies.

Background

The EPA, pursuant to Section 304(a) Clean Water Act, 33 U.S.C. § 1314(a) ("CWA" or the "Act"), has determined that, in order to be protective of public and ecological health, Dissolved Oxygen ("DO") concentration levels must be above a certain instantaneous minimum, 7-day mean and 7-day mean minimum, as set forth in Tables 1-3 of "Quality Criteria for Water 1986," EPA 440/5-86-001 (the "Gold Book"). The actual DO level suggested varies depending on whether the water body in question is a cold water or warm water habitat, whether the concentration is measured in the water column or intergravel, and, in salmonid waters, the life stage meant to be protected. *Id.* However, recently, EPA has indicated in several forums that a nutrient or aquatic life use impairment may be identified based solely on the degree of the DO variation occurring, even where the aforementioned minimum DO concentrations are being met.

Request

This request seeks any records which are the basis for EPA's assertion that diurnal DO variation, by itself, causes aquatic life impairment, including any public notices that EPA has reached this conclusion under Section 304(a) of the Act. In particular, this FOIA response should identify the scientific studies that form the basis for EPA's position and explain the degree of diurnal DO variation that may be expected to cause use impairment, even when DO levels do not fall below the minimum concentrations specified in the Gold Book.

Please contact the undersigned if the associated search and duplication costs are anticipated to exceed \$250.00. Please duplicate the records that are responsive to this request and send it to the undersigned at the above address. If the requested record is withheld based upon any asserted privilege, please identify the basis for the non-disclosure.

If you have any questions regarding this request, please do not hesitate to contact this office so as to ensure that only the necessary document is duplicated.

Respectfully,



Alexander J. E. English
Hall & Associates
1620 I St., NW
Washington, DC 20006-4033
(202) 463-1166
aenglish@hall-associates.com



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 12 2014

OFFICE OF WATER

Alexander J.E. English
Hall & Associates
1620 I Street, NW
Washington, D.C. 20006-4033

Re: Freedom of Information Act Request EPA-HQ-009040

Dear Mr. English:

This letter is in response to the Freedom of Information Act (FOIA) request for public records concerning the Categorization of Diurnal Variation in Dissolved Oxygen (DO) as an Impairment to Water Quality from Hall and Associates, dated July 31, 2014, which asserts that "the Environmental Protection Agency (EPA) has indicated in several forums that a nutrient or aquatic life use impairment may be identified based solely on the degree of DO variation, even where the aforementioned minimum DO concentrations are being met." The request seeks "any records which are the basis for EPA's assertion that diurnal DO variation, by itself, causes aquatic life impairment, including any public notices that EPA has reached this conclusion under Section 304(a) of the Act. In particular, this FOIA response should identify the scientific studies that form the basis for EPA's position and explain the degree of diurnal DO variation that may be expected to cause use impairment, even when DO levels do not fall below the minimum concentrations specified in the Gold Book."

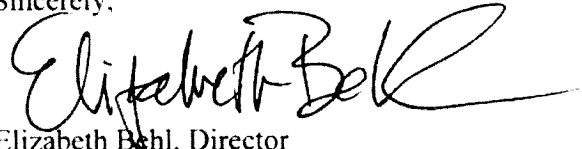
Enclosed you will find a submission of the responsive records for the EPA. This response includes pertinent language from the 1986 document entitled "Quality Criteria for Water" (EPA 440/5-86-001), available at

http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/upload/2009_01_13_criteria_goldbook.pdf). These records are identified as Attachment 1.

You may appeal this response to the National Freedom of Information Officer, U.S. EPA, FOIA and Privacy Branch, 1200 Pennsylvania Avenue, NW (2822T), Washington DC 20640 (US Postal Service Only), FAX: (202)566-2147, Email: hq.foia@epa.gov. Only items mailed through the United States Postal Service may be delivered to 1200 Pennsylvania Avenue, NW. If you are submitting your appeal via hand delivery, courier service, or overnight delivery, you must address your correspondence to 1301 Constitution Avenue, NW, Room 6416J, Washington, DC, 20004. Your appeal must be made in writing, and it must be submitted no later than 30 calendar days from the date of this letter. The appeal letter should include the FOI number listed above. For quickest possible handling, the appeal letter and its envelope should be marked "Freedom of Information Act Appeal".

This concludes the EPA response to the FOIA Request EPA- HQ-2014-009040.

Sincerely,

A handwritten signature in black ink, appearing to read "Elizabeth Behl". The signature is fluid and cursive, with a large initial "E" and a long, sweeping underline.

Elizabeth Behl, Director
Health and Ecological Criteria Division

Enclosure

Attachment 1

In response to this FOIA request, EPA is providing the current, existing EPA published quality criteria guidance for states and authorized tribes to consider when developing water quality standards for dissolved oxygen. This guidance was published in the 1986 EPA document entitled, "Quality Criteria for Water" also known as "the Gold Book" (EPA 440/5-86-001), available at

http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/upload/2009_01_13_criteria_goldbook.pdf) and contains a Table 1 on page 211 that provides the following criteria guidance values for States and authorized tribes to consider when developing water quality standards for dissolved oxygen.

Table 1. Water quality criteria for ambient dissolved oxygen concentration (mg/L).

	Coldwater Criteria		Warmwater Criteria	
	Early Life Stages ^{1,2}	Other Life Stages	Early Life Stages ²	Other Life Stages
30 Day Mean	NA	6.5	NA	5.0
7 Day Mean	9.5 (6.5)	NA	6.0	NA
7 Day Mean Minimum	NA	5.0	NA	4.0
1 Day Minimum	8.0 (5.0)	4.0	5.0	3.0

In the table above, italicized values are water column values to insure (intergravel DO concentrations) for early life stages of coldwater species. For species that have early life stages exposed directly to the water column, the figure in the parentheses apply. The guidance notes that all minima should be considered as instantaneous concentrations to be achieved at all times. The document also discussed further restrictions that apply to highly manipulatable discharges.

These dissolved oxygen criteria magnitude, frequency, and duration elements reflect the best science available at the time. In addition to the recommended values in the "Gold Book", the EPA also included information that could be used by states reflecting the state of knowledge at the time regarding dissolved oxygen dynamics and the potential for impacts on aquatic life.

The Gold Book guidance also states "A daily minimum has been included to make certain that no acute mortality of sensitive species occurs as a result of lack of oxygen. Because repeated exposure to dissolved oxygen concentrations at or near the acute lethal threshold will be stressful and because stress can indirectly produce mortality or other adverse effects (e.g., through disease), the criteria are designed to prevent significant episodes of continuous or regularly recurring exposures to dissolved oxygen concentrations at or near the lethal threshold, by the use of a 7-day averaging period for early life stages, by stipulating a 7-day mean minimum value for other life stages, and by recommending additional limits for manipulatable discharges."

EPA's 1986 Gold Book (pp. 216-217) criteria also provided information for states and authorized tribes to consider regarding monitoring of dissolved oxygen and potential

interpretation of dissolved oxygen data, which is relevant for consideration of the potential impacts of diurnal variation in DO related to this FOIA request

"The acceptable mean concentrations should be attained most of the time, but some deviation below these values would probably not cause significant harm. Deviations below the mean will probably be serially correlated and hence apt to occur on consecutive days. The significance of deviations below the mean will depend on whether they occur continuously or in daily cycles, the former being more adverse than the latter. Current knowledge regarding such deviations is limited primarily to laboratory growth experiments and by extrapolation to other activity related phenomena."

"Under conditions where large daily cycles of dissolved oxygen occur, it is possible to meet the criteria mean values and consistently violate the mean minimum criteria. Under these conditions the mean minimum criteria will clearly be the limiting regulation unless alternatives such as nutrient control can dampen the daily cycles." (underlining added)

"The significance of conditions which fail to meet the recommended dissolved oxygen criteria depend largely upon five factors: (1) the duration of the event; (2) the magnitude of the dissolved oxygen depression; (3) the frequency of recurrence; (4) the proportional area of the site failing to meet the criteria, and (5) the biological significance of the site where the event occurs. Evaluation of an event's significance must be largely case- and site-specific. Common sense would dictate that the magnitude of the depression would be the single most important factor in general, especially if the acute value is violated".

"A logical extension of these considerations is that the event must be considered in the context of the level of resolution of the monitoring or modeling effort. Evaluating the extent, duration, and magnitude of an event must be a function of the spatial and temporal frequency of the data. Thus, a single deviation below the criterion takes on considerably less significance where continuous monitoring occurs than where sampling is comprised of once-a-week grab samples. This is so because based on continuous monitoring the event is provably small, but with the much less frequent sampling the event is probably not small and can be considerably worse than indicated by the sample. The frequency of recurrence is of considerable interest to those modeling dissolved oxygen concentrations because the return period, or period between recurrences, is a primary modeling consideration contingent upon probabilities of receiving water volumes, waste loads, temperatures, etc. It should be apparent that return period cannot be isolated from the other four factors discussed above. Ultimately, the question of return period may be decided on a site-specific basis taking into account the other factors (duration, magnitude, areal extent, and biological significance) mentioned above. Future studies of temporal patterns of dissolved oxygen concentrations, both within and between years, must be conducted to provide a better basis for selection of the appropriate return period." (underlining added). The Gold Book identifies the 5 factors above as important in identifying the significance of conditions in situations where a Dissolved Oxygen criteria are not met.

From: [Beaman, Joe](#)
To: [Alexander English](#)
Cc: [John Hall; Beaman, Joe](#)
Subject: RE: Conversation this morning re: DO Variation as Water Quality Impairment (pursuant to Final Disposition, Request EPA-HQ-2014-009040)
Date: Thursday, September 18, 2014 10:56:43 AM
Attachments: [State DO pH and Temperature Criteria \(7\).docx](#)
[States Use of CMD in 303\(d\)305\(b\) Assessments.docx](#)

Mr. English,

I am inserting clarification in your email below in bold – if and where necessary.

Also, I am sending along 2 documents that we prepared in working with the states up to this point on DO and other issues.

The first contains existing example language in some state standards and implementation guidance that both EPA and the states (in the ACWA WQS forum) discussed as example language that may provide flexibility for addressing issues with diurnal variation of DO.

The second is a compilation of state approaches to using continuous monitoring data, and

This first document in particular, seems to be informative to the discussion we had yesterday morning, as a follow on to the email follow up you sent following receipt of our FOIA response.

These were not submitted with the FOIA response, since you only asked for EPA science and guidance, or science that the EPA used regarding diurnal variability. Since we have not developed anything on DO since the Gold Book, the submission you received was the only responsive Agency documentation we have.

I hope this is helpful. Please give me a call if you have any questions.

Sincerely,

Joe Beaman
Senior Biologist, Office of Science and Technology
Office of Water, EPA
202-566-0420

From: Alexander English [mailto:aenglish@hall-associates.com]
Sent: Wednesday, September 17, 2014 11:08 AM
To: Beaman, Joe
Cc: John Hall
Subject: Conversation this morning re: DO Variation as Water Quality Impairment (pursuant to Final Disposition, Request EPA-HQ-2014-009040)

Mr. Beaman –